VOLUME XVII
1937

Number 67

THE
COMMAND AND GENERAL STAFF SCHOOL
QUARTERLY

REVIEW OF MILITARY LITERATURE

LIEUTENANT COLONEL P.R. DAVISON, *Editor*
MAJOR E.M. BENITEZ, *Assistant Editor*

FOREWORD

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a section of "Abstracts of Foreign-language Articles."

A "Library Bulletin" Section lists books, recently accessioned, which are of particular significance.

This Quarterly is published as a guide to modern military tendencies and to inspire vigorous thought on the subjects treated.

The opinions expressed by authors are not necessarily official.

December, 1937

Fourth Quarter

E COMMAND AND GENERAL STAFF SCHOOL QUARTERLY—REVIEW OF ITARY LITERATURE, is published by The Command and General Staff School Fort Leavenworth, Kansas. Entered as second-class matter August 31, 1934, at Post Office at Fort Leavenworth, Kansas, under the Act of March 3, 1879. Subption rate: One year in the United States and possessions, Cuba and Mexico, $1.00; ign, $2.00 a year.

HAVE YOU READ?

THE SIEGE OF ALCAZAR. By Major Geoffrey McNeill-Moss (Historical)

THE UNITED STATES ARMY IN WAR AND PEACE. By Colonel Oliver Spaulding. (Historical)

EUROPE IN ARMS. Captain B.H. Liddell Hart (Military-Political)

THE STORY OF SECRET SERVICE. By Richard W. Rowan (Historical)

MARSHAL NEY: A DUAL LIFE. By LeGette Blythe (Biography)

ZEPPELIN: THE STORY OF LIGHTER-THAN-AIR CRAFT. By Captain Ernst A. Lehmann (Historical)

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OLD FUSS AND FEATHERS. The Life and Exploits of Lieutenant General Winfield Scott. By Arthur D. Howden Smith (Biography)

CONTACT. By Charles Codman (Historical)

THE LAST OF THE GENTLEMEN'S WARS. By Major General J.F.C. Fuller (Historical)

IF WAR COMES. By Major R. Ernest Dupuy and Major George F. Eliot (Military)

A HISTORY OF THE ART OF WAR IN THE SIXTEENTH CENTURY. By Sir Charles Oman (Historical)

RAW MATERIALS OR WAR MATERIALS? By Alfred Plummer (Munitions)

THE PRIVATE MANUFACTURE OF ARMAMENTS. By Philip Noel-Baker (Munitions)

THE SPANISH PLOT. By E.N. Dzelepy (Political)

SINGLE TO SPAIN. By Keith Scott Watson (War History)

THE TRAGIC FALLACY. By Mauritz A. Hallgren (Political)

SURVEY OF INTERNATIONAL AFFAIRS, 1935. By Arnold J. Toynbee and V.M. Boulter (European Policies)

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THE WAR OFFICE AT WAR. By Sir Sam Fay (War History)

THE FRENCH WAR MACHINE. By Shelby Cullom Davis (Military-Political)

THE REVOLUTION BETRAYED. By Leon Trotsky (Political History)

CAVALRY COMBAT. (Military)

CHEMICALS IN WAR. By Lieutenant Colonel Augustin M. Prentiss (Military)

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THE COMMAND AND GENERAL STAFF SCHOOL PRESS
FORT LEAVENWORTH, KANSAS
380—12-31-37—3500

ACKNOWLEDGMENT

The editors of the *Quarterly* desire to express their thanks and appreciation to the many persons who have valuably assisted in the preparation of material for this issue. The work of contributors has been done in addition to their other duties and on their own time. We are very grateful to the following officers for their generous donations:

Colonel L.H. Brereton: *Revue de l'Armée de l'Air* (April, May, June 1937)

Captain H.N. Hartness: *Die Kraftfahrkampftruppe* (April, May, June 1937)

Captain W.G. Johnson: *Bulletin Belge des Sciences Militaires* (April, May, June 1937)

Major T.R. Phillips: *Revue Militaire Suisse* (February, March, April, May, June 1937)

Major R.G. Tindall: *Revue d'Artillerie* (April, May, June 1937); *Revue d'Infanterie* (April, May, June 1937); *Revue Militaire Générale* (April, May, June 1937).

Major L.K. Truscott, Jr.: *Revue de Cavalerie* (March-April, May-June 1937).

THE JAPANESE ATTACKS AT SHANGHAI AND THE DEFENSE BY THE CHINESE, 1931-1932

AN ORIGINAL MILITARY STUDY

By

Major E.D. Cooke, Infantry

INTRODUCTION

In the course of the naval operations during the first Anglo-Chinese, or "Opium" War, the British realized the possibilities of Shanghai and at the treaty of Nanking (1842), it was included among the five "Treaty" ports opened to foreign trade.

In 1843 the British located a settlement north of the native city of Shanghai. This was the beginning of the International Settlement.

After the fall of the Manchu Dynasty in 1912 the attempt to maintain an effective central government at Peking soon broke down. By degrees the provincial governments fell into the hands of a number of practically independent war lords, maintaining armies which they employed to further their own interests.

In the south, however, a local government of a different character and with different ideals was formed at Canton.

Under the leadership of Sun Yat-sen, Canton became the headquarters of a national revolutionary government. Prepared at first to throw in its lot with the government at Peking, it soon found that there was little common ground and resumed its independence. Soviet Russia established close relations with the Cantonese government, supplying munitions and organizing the Cantonese Army.

For a few years the Canton Government took no aggressive part in Chinese affairs, but steadily consolidated its position, bringing neighboring war lords, with their armies, to heel.

By 1926 the Canton Government felt itself strong enough to extend its sphere of action and to embark on an attempt to establish control over the whole of China, and its armies under Chiang Kai-shek advanced north. Under the teachings of the

Russian Soviet, their ambition was to expel all foreign capitalism from China.

A northern group of war lords, headed by Chang Tso-lin, the ruler of Manchuria, moved south to oppose the advance of the Cantonese. This group included the army of Sun Chuan-fang who controlled the provinces astride the lower Yangtze and was in consequence directly responsible for the security of Shanghai.

Chiang Kai-shek's army arrived at Hankow in September 1926 and was a signal for an intense boycott of foreigners, especially British and Japanese, in the Yangtze trading centers.

On 5 January 1927 the British Concession at Hankow was overrun by a mob and the small detachments landed from the British cruiser lying at this river port were quite unable to exercise control.

The Cantonese authorities undertook to restore order and to protect the Concession; but it soon became apparent that this was only an excuse for its occupation. In fact, the British deemed the whole episode as prearranged—a new technique suggested to the nationalist leaders as a means of evicting British interests.

The arrival of the refugees from Hankow stirred Shanghai deeply; and it was felt that should a Cantonese army reach Shanghai, the same technique might be employed to overrun the International Settlement.

The British hoped that international action would be taken for the protection of Shanghai, but the other nations were unwilling to commit themselves. The British, therefore, on 17 January 1927, ordered the assembly, from various points, of a force representing a division (less a considerable amount of its artillery), for the protection of Shanghai. This, although the Municipal Council had not yet asked for reinforcements.

The two leading British battalions disembarked at Shanghai on 14 February 1927 despite the protest of the Central Government at Peking.

On 16 February the northern Chinese army was defeated by the Cantonese and by the 23d was in full retreat.

In March 1927 the Municipal Council declared a state of emergency, mobilized the Shanghai Volunteers and applied for additional troops in order to prevent any of the belligerents from capturing the International Settlement, sacking it and massacring its inhabitants.

In April, Chiang Kai-shek was deposed from command, splitting the Nationalist Party. He later regained command, and succeeded in the expulsion from China of the Russian Mission.

Chang's success transferred the Nationalist Government to Nanking and Shanghai was able to maintain relations with a single Chinese party. In order to insure these relations being of a peaceful nature, the Powers maintained a strong naval force in the immediate vicinity of Shanghai.

An important point to remember in this discussion is, that what is later to be called the Hongkew salient (a part of Greater Shanghai) was not occupied by foreign troops. This area was covered by patrols only, usually armored cars, along Szechuan Road and no foreign troops had gone west of that road.

Following the Japanese invasion and occupation of Manchuria in 1931, the Chinese people retaliated by the organization of Anti-Japanese boycott associations. These were particularly active in Shanghai and caused enormous damage to Japanese trade. This then was the basis for the hostilities which followed.

Present day Shanghai consists of six main areas: The Old City; The International Settlement; The French Concession; Chapei; Pootung; Nantou.

It is China's largest city and most important port, with an approximate population of 3,500,000. The foreign population is about as follows:

Japanese	14,230
British	7,047
Russian	2,972
American	1,800*
Portuguese	1,400
Others	3,034

To a degree unparalleled in any other great country is the foreign trade of China concentrated by geographical conditions into the single sea-gate of Shanghai.

The hinterland of Shanghai, in the area drained by the Yangtze River, has a population estimated at 180 millions. It may be said that about one-half of China, and economically the more important half, is ultimately served by Shanghai. It is the nearest port of China to Japan proper.

*Some authorities claim the American population, exclusive of U.S. Marines, was about 4,000.—(*Editor*)

Although it owed its origin to the enterprise of British merchants, at an early stage of its history Shanghai acquired an international character.

Within the city is the International Settlement and the French Concession. The Settlement contains roughly one million inhabitants, of whom only some thirty thousand are foreigners. France alone holds a separate Concession; the rest of the Foreign Settlement being held under an international agreement with China.

The government and administration are in the hands of an international Municipal Council which maintains touch with the Governments of the various nationals represented, through the Consular Service.

This Municipal Council, or executive power, consists of:

5 British
2 American
2 Japanese
3 Chinese.

This is important to note as it will be seen that the British dominate the Council and can swing a majority of the votes by siding with either of the other three countries.

The Council provides its own police force, which in emergencies has the backing of the Shanghai Volunteer Corps. The latter force in 1927 had been increased to a strength of approximately 80 officers and 1,400 other ranks, and included small bodies of mounted troops, artillery and engineers. Its commanding officer and adjutant are officers of the British Army lent to the Municipal Council.

Members of the Volunteer Corps are all connected with business, or the permanent organization of the Settlement, and cannot be kept on duty over a prolonged period without serious interruption of the normal life of the community.

Behind the Volunteer Corps, the Council is able to rely on assistance provided by landing-parties from the warships of all nations stationed in Chinese waters.

The total force available is adequate to cope with local disturbances and to provide a system of cordon posts around the Settlement, which area stretches for some eleven miles along the left bank of the Whangpoo River and varies in depth from two miles to one-quarter of a mile.

In addition, owing to the growth of the town, both the Municipal Council and many individual foreigners have ac-

quired property in Chinese territory beyond the Settlement boundary, either across the river, in the Chinese city to the south, or in the Chinese suburb of Chapei. Over these the Municipal Council has no authority.

It must be remembered that, regardless of trade treaties, the Chinese regard the whole place as by rights their own. While forced to accept the defense of Shanghai by foreign powers, the Chinese can rightfully look upon any excursion of foreign troops beyond the defensive zone of the International Settlement as an infringement on their sovereignty and an invasion of their country.

The rights of the Chinese, however, bear little weight with other Powers where the investments of their own nationals are concerned.

A Brief Survey of the Cotton Mill Industry in Shanghai

In 1894, the conclusion of the Treaty of Shimonoseki enabled Japan and other foreign countries to open mills in China.

The Chinese Year Book (1935) shows that one British company controls three mills; thirteen Japanese companies control forty-three mills and sixty Chinese companies control eighty-one mills in China. This, however, does not show the true picture.

While the Japanese mills are owned and controlled by banks and commercial concerns in Japan, many if not all of the Chinese mills are backed in part or in whole by British and American capital. The Japanese then feel that they are against the rest of the world in the struggle for supremacy of the cotton trade of China.

In 1932 the cotton mills in Greater Shanghai were as follows:

Japanese	30
Chinese	28
British	3

Chinese companies had planned to build six new factories while the Japanese could only organize finances for four new factories.

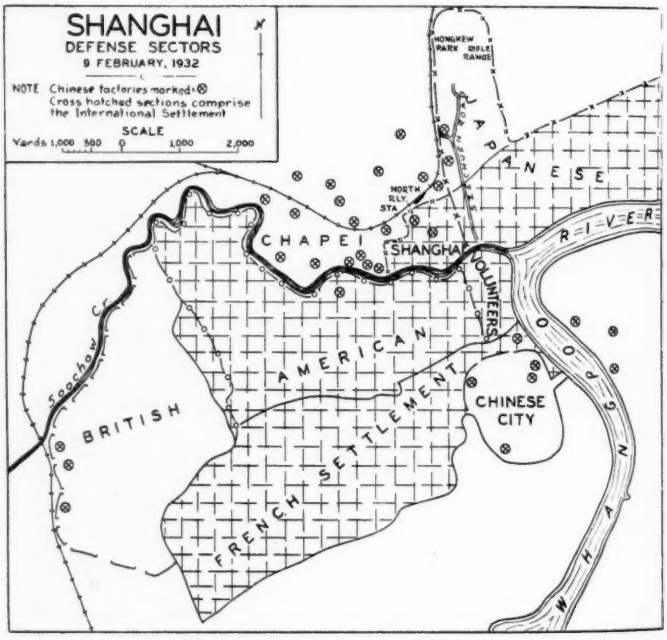
The oriental solution to such a problem was not difficult to anticipate, namely, that if the Japanese could not increase

the number of their mills, then those of their competitors mu t be decreased in number.

The following map shows the Shanghai defense sectors, together with the location (approximate) of important Chinese cotton mills and factories.

The Japanese persistence in attempting to root out, by piecemeal frontal attacks, the Chinese troops from the suburbs of Shanghai, may be explained by the map.

MAP NO. 1



NARRATIVE OF THE SINO-JAPANESE AFFAIR OF 1931-1932

In September 1931, the Anti-Japanese boycott, in existence since July as result of the Korean affair, intensified by occupation of Manchuria and stringently enforced, caused enormous damage to Japanese trade.

In Shanghai the Japanese held mass meetings and passed resolutions demanding that their Government take "direct

action" against the Chinese. They paraded through the Hongkew district, smashed window panes and assaulted Chinese shopkeepers. Their attitude was that of demanding subservience from an inferior race.

The Chinese then held a mass meeting of their own and among other things they resolved:

> That war be declared against Japan.
> That economic boycott be strictly enforced against Japan.
> That absolutely no foodstuffs be sold to Japan.
> That Chinese workers in the Japanese cotton factories go on strike.

The news of these affairs soon reached Japan and early in October the Imperial Government addressed a note to the Nationalist Government, pointing out that anti-Japanese agitations now seen in all parts of China constituted nothing less than an instrument of national policy.

The Chinese, still attempting to obtain redress for the Manchurian affair through the League of Nations, treated this latest Japanese remark as superfluous.

On 18 January 1932, five Japanese monks were attacked by Chinese workmen and so severely beaten that two of them died. This overt act was all that Japan needed as a basis for stringent demands upon the Chinese Government. When it is seen that the five monks deliberately went into the Chinese section of Shanghai and attracted public attention by playing Buddhist musical instruments in front of the Chinese towel factory of "San Yu," it is not difficult to imagine that Japanese religion is no small instrument in the hands of oriental diplomats.

This same day a Chinese newspaper, the *Min Kuo Jih Pao*, gave the Japanese further grounds for protest when it expressed regret that an assassin's bomb had missed the life of Japan's Emperor.

The following day, 19 January, some 500 Japanese paraded through Shanghai, breaking window glasses in Chinese shops displaying anti-Japanese posters. Also, Mr. K. Murai, the Japanese Consul-General, called at the Mayor's office and lodged a verbal protest in connection with the assault upon the Japanese monks. This had hardly been accomplished when some fifty Japanese proceeded into the Chinese area and set fire to the "San Yu" towel factory, in front of which the monks

had been attacked. On their way back they were stopped by the Shanghai municipal police. A fight ensued in which three Chinese and three Japanese were wounded, one of each mortally.

On the 20th the Japanese Consul-General made the following demands upon the Mayor of Shanghai:

> A formal apology by the Mayor.
> The immediate arrest of the assailants of the monks.
> Payment of solatium and hospital expenses.
> Suppression of all anti-Japanese movements and immediate dissolution of all anti-Japanese boycott associations.

The fourth demand, of course, was what really counted. The anti-Japanese boycott associations were now accused of being the root of all the trouble and had been definitely defined as a national issue. Mayor Wu at once countered with demands for similar reparations for the conduct of the Japanese in destroying Chinese property. This was brushed aside by the Japanese as unworthy of consideration until their own demands had been met. Japanese residents held a meeting in the Japanese Club and adopted a resolution asking the Japanese Government to send vessels and military units for the complete suppression of the anti-Japanese movements.

On the 21st the Japanese naval commander in the harbor of Shanghai, Admiral Shiosawa, issued a declaration to the effect that in the event of Mayor Wu's failure to give a satisfactory reply to the Japanese Consul-General and carry out the terms as demanded, the Admiral would take the necessary action to protect the rights and interests of the Japanese Empire.

When this announcement became public, the Shanghai Defense Council, composed of the commanding officers of all forces in Shanghai, including the Shanghai Volunteers, inquired of the Japanese when they would take action, in order that the other troops could be prepared to occupy their defensive areas. The Japanese replied that they did not know when they would take positive action, but certainly not until more ships had arrived from Japan.

It is believed that during this conference the Hongkew salient was added to the Japanese defense sector. No record had been made of when the salient was added to the defense areas of Shanghai, and certainly the Chinese were not informed of the decision. No reason has ever been given for the assign-

ment, although, due to the fact that a great deal of foreign capital, mostly Japanese, was invested in the area, its absorption sooner or later was inevitable. The responsibility for the decision must rest upon the shoulders of the British officer commanding the Shanghai Volunteers, the senior member of the Defense Committee.

On 22 January, Japan presented a virtual ultimatum to the Chinese Mayor of Shanghai, demanding immediate suppression of anti-Japanese organizations, agitation, and the boycott. The Mayor's request for a week's delay in submitting the Chinese reply was refused.

This same day the Japanese Navy in Shanghai demanded an apology from the *Min Kuo Jih Pao* for its insulting remarks about the Japanese Emperor. This last seemed to be a personal affair, such as could be expected from the old cast of Prussian officers in the German army, but it must be remembered that the Japanese naval officers were extremely jealous of the success of the Japanese army officers in Manchuria and were itching for the opportunity to gather in some of the notoriety and glory.

The Chinese military authorities outside the Settlement now declared that, should the Japanese navy send its men into Chinese quarters, they would be resisted to the utmost. Furthermore, the Chinese proclaimed a state of siege in Woosung and in Lunghua, prohibiting Japanese traffic outside the International Settlement. They also began the erection of sandbag emplacements, wire entanglements and tank traps. These were under the supervision of competent leaders and a few German instructors, and were destined to give the Japanese plenty of grief.

Observing this activity, the Japanese Consul-General informed Mayor Wu that if no satisfactory reply was received within a reasonable time, the Japanese Government would take action to enforce the demands.

On 25 January, units of the Chinese 19th Route Army, occupying the Shanghai area for the Nationalist Government, began the erection of defenses in Chapei. It had been reliably reported that this unit had orders from Nanking to retire in case the Japanese attacked. The Japanese therefore looked upon their activity as some kind of a bluff, although they undoubtedly hoped the Chinese would give them enough of a fight to get into official orders.

On the 26th, the Executive Committee of the International Settlement caused the *Min Kuo Jih Pao* to be closed, perhaps hoping to avert hostilities. The following day the Anti-Japanese Boycott Association was closed by the Mayor and their various offices sealed by Chinese police.

Nevertheless, the Japanese Consul-General remained unsatisfied and sent the Mayor a 22-hour ultimatum requiring unqualified agreement with all Japanese demands, the ultimatum to expire at 6:00 PM, 28 January.

On the 28th came the "pay off" and the Japanese methods of jockeying others into pulling the chestnuts out of the fire is well worthy of consideration.

Brigadier General Fleming, head of the Defense Committee, was informed by Mr. Toda (Japanese liaison officer) at 7:30 AM, 28 January, that the Japanese had decided to take the necessary action on 29 January if the Chinese did not meet their demands. General Fleming called a meeting of the Defense Committee at 9:30 AM. The Japanese members did not attend. The Committee decided to declare a State of Emergency to go into effect at 4:00 PM, 28 January, at which time all troops would man their defense sectors.

At 2:00 PM the Japanese Consul-General received the Chinese reply to his ultimatum and at 3:00 PM he blandly informed the Shanghai consular body that the reply was satisfactory and that if the Chinese promises were kept a clash would be avoided.

As all the other foreign troops were now occupying their defense sectors, while the Japanese stood fast, it gave the appearance of a premature move by the Defense Committee. But once having placed the onus on others, the Japanese stated that they would comply with the Defense Scheme and occupy their own area.

Under cover of darkness a landing force of 2,000 Japanese bluejackets, with armored cars, trucks, and light artillery formed in the streets of Shanghai. At 11:00 PM the Naval Commander notified the Mayor that he intended to occupy Chapei and demanded that the Chinese troops there be withdrawn. This, the Chinese declare, was the first intimation they had of the new Japanese defense area. Furthermore, the Japanese indicated that they intended to go even farther into Chinese territory for the defense of Japanese nationals residing in Chapei.

As the Japanese moved forward thirty minutes after their commander had sent notice of his intentions to the Chinese, it must have been known that the Chinese could not have cleared the area, even if they had intended to do so. Relying on information that the Chinese had orders to withdraw in the face of a Japanese attack, it appears obvious that the Japanese naval officers hoped to surprise and overwhelm large bodies of Chinese troops, thus bringing great credit to the Japanese Navy.

With the landing force were many Japanese civilians, or "ronins" (Japanese assassin, or one who kills by surprise or secret assault). The Japanese ronin enters an area in civilian clothes, starts some kind of a riot in order that Japanese troops may have a pretext for taking a hand, and then remains to loot and terrorize. This particular activity is a recognized agent wherever Japanese forces operate.

So contemptuous of Chinese fighting ability were the Japanese that they made no attempt at reconnaissance.

The first Japanese advance into the Hongkew Salient, west of the railroad, was unopposed, except for a few Chinese policemen who were caught by surprise and disarmed. Soon, however, firing broke out. Both sides claim the other fired first, but that particular area was not occupied by regular Chinese troops, only gendarmes and civilians. Certain it is that Chinese started sniping at about midnight and at this resistance the Japanese unleashed their full force. They at once dispatched planes which began dropping incendiary bombs in the darkness.

While the bombing was going on, the Japanese attempted to push west from the Szechuen Road. They were fired upon by Chinese gendarmes and then came in contact with the Chinese 5th and 6th Regiments, 156th Brigade, 78th Division. The Japanese advance was halted.

Several Japanese attempts to outflank the Chinese from the south by going through defensive sectors of the Shanghai Volunteers were prevented after much argument.

A Chinese armored train began patrolling the Woosung Railroad line, firing on any Japanese seen. Chinese mufti-soldiers continued to snipe in the Japanese rear.

By daylight on the 29th, the Japanese had succeeded in occupying their defensive sector, but there is little doubt that this could have been accomplished anyhow under proper procedure. They had succeeded, by aerial bombing, in setting fire to the cotton mills and most of Chapei besides, even destroy-

ing The Commercial Press, the largest of its kind in China, with 600,000 volumes in its Oriental Library. But the Japanese Navy had not performed to its satisfaction. With 34 warships and 2,000 marines they had been unable to advance against the Chinese 19th Route Army.

The American and British civil and military officials attempted to arrange a truce between the belligerents. The Japanese stated that if the Chinese would stop firing the Japanese marines would remain on the east side of the Shanghai-Woosung railway. The Chinese replied that the Japanese Marines were already in Chinese territory and that the only way to avoid further conflict would be for the Japanese forces to withdraw.

In view of that statement the Japanese Commander now gave it to be understood that there was no war with China, but only one with the 19th Route Army, which they claimed was acting contrary to the orders of the Nanking Government.

On 30 January the Nanking Government publicly announced its commitment to a policy of resisting Japanese demands with military force, and that it stood whole-heartedly behind the 19th Route Army in the Shanghai struggle. It also announced the temporary transference of the capitol from Nanking to Loyang in Honan Province; this because of the accessibility of Nanking to the Japanese battleships. But the Japanese Government's theory of a restricted war did not permit Japanese warships to proceed up the Yangtze and threaten the Chinese capitol with bombardment. So at Shanghai might be seen the queer spectacle of war vessels of both nations lying near each other at anchor in Chinese waters.

The Chinese protested the Japanese withdrawing into the International Settlement and further using it as a base for military operations. Both sides used the Settlement as a base for their wounded, although on the whole, it might be assumed as barred to the Chinese Army, but not to the Japanese.

The rival forces maneuvered around the Settlement; partly hindered by the necessity of avoiding it, partly helped by its use as a screen, as a pivot, or as actual battle position. An up-to-date umpire staff would probably have described the entire situation as "unreal" and condemned both sides for violating accepted principles of war.

During the 30th there had been continual sniping and desultory firing which continued on the 31st, when a meeting

was held between the Japanese Consul-General, the Admiral, Mayor Wu, a division commander of the 19th Route Army, the British and American Consul-Generals and Commanders of the Settlement Defense forces. Both sides agreed not to fire unless fired upon until peace proposals could be presented to their Governments. This was a waste of time. However, both sides accepted the proposals for transmittal to their Governments.

During 1 February the truce was more or less observed, but the Chinese positions were daily being strengthened on all sides. At North Station an armored train with field pieces was now stationed.

From the beginning the Chinese had put several hundred of their best shots in civilian coolie dress. These men crept around or through the Japanese lines at night. They would lie concealed, fire on any Japanese in sight and run immediately. They caused considerable nervousness in the Japanese rear and kept many men, who otherwise could have been resting, busy patrolling. They delivered a very telling blow at Japanese morale, especially when they got close to the Japanese headquarters and forced it to move. The Japanese burned many houses in an effort to dislodge these men.

The Japanese themselves, who seem to have had insufficient regular force for the defense of their area, had mobilized and armed all their so-called reservists, who wore civilian clothes distinguished by a brassard.

The Japanese naval authorities now took complete control of the Hongkew district inside the Settlement, barricading streets, disarming police and paralyzing all municipal activities. It is alleged that actuated by a spirit of revenge against the Chinese for earlier anti-Japanese activities, numerous excesses, including summary executions, were committed by marines, reservists, and ronins.

On 2 February the Chinese accepted the peace proposals submitted by the Powers. The Japanese Commander was quite well aware that his country would not accept the proposals, so about noon he declared that the Chinese were massing troops with a view to surrounding the Japanese and that he would have to send up planes for reconnaissance. The Chinese promptly opened fire on the planes, whereupon the planes started bombing Chapei and the fighting started again.

During the lull in the fighting the Japanese had been considering the isolated position of the Woosung Forts at the mouth of the Wangpoo River.

On 3 February the Japanese Consul-General informed the Consular authorities that three Japanese destroyers had been fired upon from the Woosung Forts and that the Japanese therefore intended to occupy them.

Through lack of reconnaissance, the Japanese again failed. The effectiveness of their naval guns was materially reduced by the fact that they were firing at point blank range with resultant flat trajectory and as they used armor-piercing shells, most of them failed to burst in the soft earthworks. The Chinese replied with inaccurate gunfire, but frequently harassed vessels with machine-gun fire as they passed into the Whangpoo channel a few hundred yards from the forts. The Japanese attempted to land bluejackets and occupy the forts, but were repulsed with considerable loss.

On 4 February the expected Japanese reply to the peace proposals arrived, *i.e.*, ". . . it is a settled policy of the Japanese Government not to accept assistance of neutral observers or participants in the settlement of questions . . . For these reasons the conditions embodied in paragraph five of the Powers' note is not acceptable to the Japanese Government."

To emphasize their refusal to submit to arbitration, the Japanese Navy made their last attack through 4 and 5 February. With a force brought up to a strength of about 5,000 and assisted by artillery and bombing planes, they went in frontally against Chapei, while the ships again bombarded the Woosung Forts. One Japanese destroyer ran aground on the shoals and the 19th Route Army held its ground in Chapei in spite of heavy casualties. Japanese bombs fell on a refugee camp full of men, women, and children, situated well behind the Chinese lines.

The Municipal Council, in an effort to prevent the continuance of summary executions and other excesses, forced the Japanese, through the Consular Body, to agree to turn over all suspected persons arrested in the Japanese area to the Municipal police.

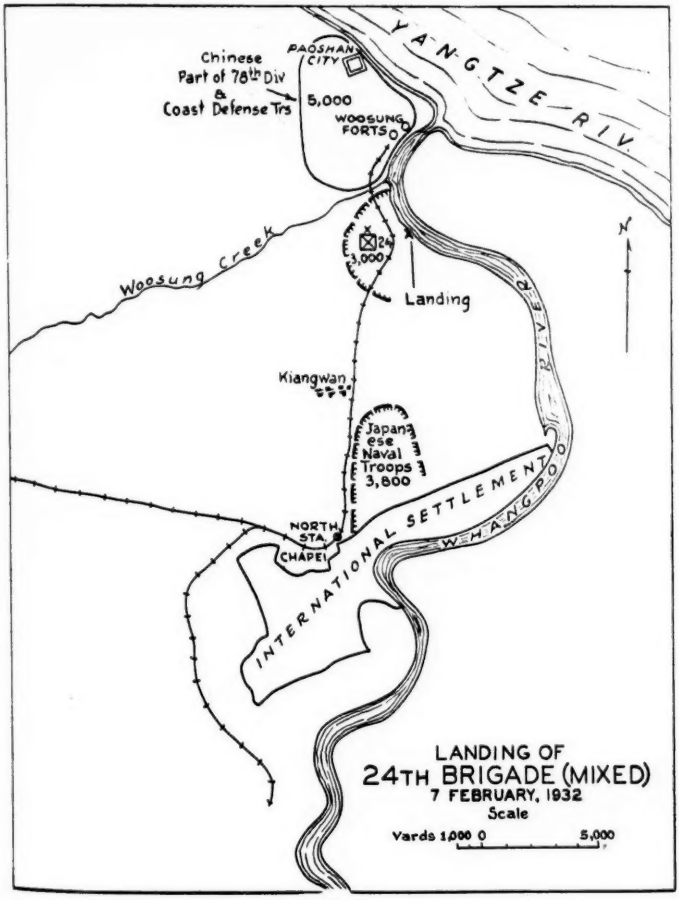
On the 6th the Japanese Government decided to dispatch military forces to Shanghai on board men-of-war.

The following day the Japanese 24th Mixed Brigade, about 3,000 strong, landed at Chang Wah Pang, south of Woosung

Creek (Woosung Creek has a strong tidal current and is about 300 feet wide), under cover of naval gun fire on Woosung. Navy detachments from Shanghai with armored cars also participated in covering the landing. The Chinese had defensively organized the north bank of the creek, also the village and factories between the creek and the forts.

On the night of the 7th and during the 8th, the Japanese attempted to cross Woosung Creek on pontoon bridges, under supporting fire from naval guns, land artillery, and aerial bombing. The attack broke down in the face of strong Chinese resistance.

MAP NO. 2



On 8 February, Foreign Minister Yoshizawa at Tokyo informed a group of foreign ambassadors that it would be useless to negotiate with the Nanking Government regarding Shanghai because the troops there were controlled by Cantonese insurgents who wished to embarrass Chiang Kai-shek, head of the Nanking Government.

On the 11th, Japanese aeroplanes dropped two bombs and destroyed the Wing On cotton mill situated within the International Settlement itself, killing six and wounding ten. The bombing was explained as "accidental," but the British thought it a gentle hint from the Japanese for foreigners to quit meddling.

On 14 February, a company of Japanese infantry from the 24th Brigade, crossed to the north bank of Woosung Creek some distance up stream, by means of a floating cork bridge. A Chinese counterattack forced the Japanese back with severe losses. This same day Lieutenant General Uyeda, with the advance contingent of the Japanese 9th Division, with mountain artillery, air service, tanks and auxiliary troops, began disembarkation at Shanghai. By the 15th they had landed their full strength, 14,300, and were in billets in Yangtzepoo (that part of the International Settlement occupied by the Japanese).

The Chinese Minister of Foreign Affairs emphatically protested against the landing of Japanese army troops in the Settlement and requested the American and British officials to take steps to end the Japanese violations of the Settlement neutrality. The Shanghai Municipal Council stated that Japan was one of the several powers having political and other interests in the Settlement; that the Settlement's neutrality could only be maintained and guaranteed by these same powers; and that the Japanese Government and not the Council was solely responsible for the acts of the Japanese armed forces in the Settlement.

The Chinese now began reinforcing both their Woosung and Kiangwan (just north of Chapei) lines, bringing in the 87th and 88th Divisions of the 5th Route Army.

The Japanese completed concentration of its 9th Division.

By 18 February the Japanese had assembled a force of about 16,000 troops, with howitzers, guns, tanks, and aviation, with the bulk of the force southeast of Kiangwan Race Course (about half-way between Shanghai and the Woosung Forts).

The Japanese planned to contain the Woosung Forts garrison north of Woosung Creek with a small force of the 24th Brigade, hold the Chapei line with the naval landing force, and break through the Chinese center at Kiangwan, then to turn southwest toward Chenzu. The main effort to be made by the 9th Division, assisted on the right by the remainder of the 24th Brigade.

The British made one last effort to avert further hostilities. The Chiefs of Staff of the two military leaders met in the presence of Sir Miles Lampson, to discuss terms. The Japanese terms, namely that the Chinese must remove the boycott from all Japanese goods, was found unacceptable by the Chinese representative. Plans for the attack and defense continued. In this respect the Chinese had all the advantages, whereas the Chinese inhabitants of Shanghai kept the Chinese leaders fully informed of every move the Japanese made.

Furthermore, the continual sniping by Chinese sharpshooters in the Japanese rear areas was extremely disconcerting to the Japanese officers.

To make it a little more difficult for the Japanese diplomats, General Tsai Ting-kai stated that the troops under his command were an integral part of the army of the National Government of the Republic of China, by whose orders alone his activities were directed and therefore could not withdraw 12 miles as demanded by the Japanese.

On 20 February the Japanese attacked behind a screen of tanks. The Chinese put up little resistance east of the railway, but the strength of their position at Kiangwan soon developed. With the aid of their tanks, the Japanese gained a footing in the eastern end of Kiangwan, but during the next seven days the entire 9th Division became deeply involved with stubborn Chinese resistance in and around the village. The Japanese repeatedly attempted to get into Kiangwan with their tanks, but were unsuccessful for several days. The Chinese tank defense and the deep, well defined creeks, impossible for tanks to ford, prevented their effective use later in the operation.

The Japanese right had relatively easy going until they came in contact with the entrenched positions of the Chinese 60th Division, when their advance was halted.

By the 22d all Japanese troops had been committed and their line was stretched thinly. The Chinese counterattacked

at the junction of the 9th Division and 24th Brigade with some little local success.

During the 23d the Japanese troops remained in position while airplanes and artillery concentrated on Chinese strategic points until destroyed. They also bombed the Chinese airdromes at Hungjao and Soochow, causing considerable damage.

While the Japanese bombed Lunghua and Chenzu on the 24th, their attack had spent itself. Again the Japanese had miscalculated the size of the force required to clear the Chinese from Shanghai and environs, but the Tokyo Government promptly decided to remedy the difficulty by dispatching additional reinforcements.

A second general offensive was launched at 6:30 AM on the 25th. This was a direct frontal attack and by 4:00 PM the Japanese had gained a foothold in the Chinese front lines.

The attack continued on the 26th and further positions in the Chinese front lines were captured. Fifteen Japanese bombers, protected by pursuit, paid a surprise visit to Hangchow and bombed the two airfields there, destroying about ten Chinese planes.

By the 27th the Japanese had cleared the Chinese from Kiangwan and started preparations for an offensive against the Chinese second line in front of Tazang. The 11th and 14th Divisions with General Yoshinori Shirahawa in command, sailed from Japan this day.

On the 28th the 22d Regiment of the Japanese 11th Division was landed at Chang Wah Pang and sent up to reinforce General Uyeda's forces.

At the request of Vice Admiral Nomura, Commander-in-chief of the Japanese naval forces at Shanghai, Japanese and Chinese representatives met aboard H.M.S. "Kent," in the presence of Admiral Sir Howard Kelly and another British officer, and conferred amicably for two hours and a half. The principle of mutual and simultaneous evacuation was agreed upon, together with a provision that neutrals should assist the Japanese and Chinese in controlling the evacuated area. Both sides submitted the truce proposals to their respective Governments.

This move by the Japanese commander was only actuated by public sentiment in Japan. It is fairly certain that the Japanese had never envisaged the extent to which outside interests would be concerned, nor realized their unpopularity abroad

because of the Manchurian and Shanghai operations. Hence the peace gesture.

Having made the gesture, the Japanese attacked next morning (29th), with small local successes.

The remainder of the 11th and the 14th Divisions arrived at the mouth of the Yangtze River and prepared for an offensive on 1 March.

On the morning of 1 March, the Japanese Navy opened fire on the Woosung Forts and one regiment of infantry landed south of Woosung Creek as a feint. Under cover of this move, and assisted by a dead calm on the Yangtze River, two regiments of infantry and some mountain artillery were landed against fairly light Chinese resistance at Liuho. Meanwhile the 24th Brigade, 9th Division, and Naval Landing Force, launched another determined offensive.

That same evening the Chinese 19th Route Army issued an order to withdraw all Chinese forces to their second line of defense, about 12 miles from Shanghai. The efficient manner in which the withdrawal was carried out leads one to believe that it was planned several days before the threat from the north was actually manifest. A limit to the Chinese Army's resistance was in any case set by the increasing scarcity of its ammunition.

During the 2d, the Japanese pursued the Chinese largely with aviation, but rapidly advanced once the area was vacated. The Chinese units escaped practically intact.

The Chinese had now retreated outside of the 12-mile zone specified in the original Japanese ultimatum and the Japanese now made counter proposals to the agreements reached on board the British ship on the 28th. These were rejected by the Chinese as tantamount to dictation of terms to a defeated enemy.

On the morning of the 3d, the Japanese subjected the Woosung Forts to an intensive naval and aerial bombardment. The Chinese garrison managed to get away, leaving a small detachment to carry on a rear guard action. The Japanese made a landing under cover of the bombardment, dispersed the rear guards and occupied the Forts and the village of Woosung. No fighting of any consequence occurred after this date.

This same day a special session of the League of Nations convened to consider the Sino-Japanese conflict, in response to China's appeal under Article XV of the League Covenant. The Japanese representative, Mr. Sato, declared that hostilities had

ceased at Shanghai, and the Chinese representative, Dr. W. W. Yen, declared that they had not.

On the 4th the League unanimously voted a resolution calling for Japan's unconditional military withdrawal from the Shanghai area.

On the 5th, fifteen small powers made appeals to the League Assembly to uphold the sanctity of the Covenant's obligations in the conduct of international relations. This pressure on Japan caused the Commanding General of their Expeditionary Army at Shanghai to issue an order to suspend action so long as the Chinese should refrain from hostilities.

The Chinese, for their part, officially announced on 7 March that they had no intention of relinquishing sovereignty to the invaded territory; that they would retreat only under pressure, and that they would advance eastward upon any Japanese retirement towards Shanghai.

This attitude might have brought on a diplomatic deadlock, but the Japanese were becoming alarmed over their national finances and were now willing to welcome any solution that would permit the Japanese troops to retire from Shanghai with honor.

Their troops began withdrawing on 18 March, and finally, on 5 May a formal armistice agreement was signed and on that date hostilities may be said to have officially ceased.

Conclusions

There is no doubt that the Japanese were astonished over the Shanghai affair. Using every known modern weapon, except chemicals, they never did force their will upon the Chinese forces. The latter even withdrew intact in the face of a wide envelopment and took up a second position with few losses.

Had the Chinese not been fighting a strictly passive defense, the cost to the Japanese might have been much greater.

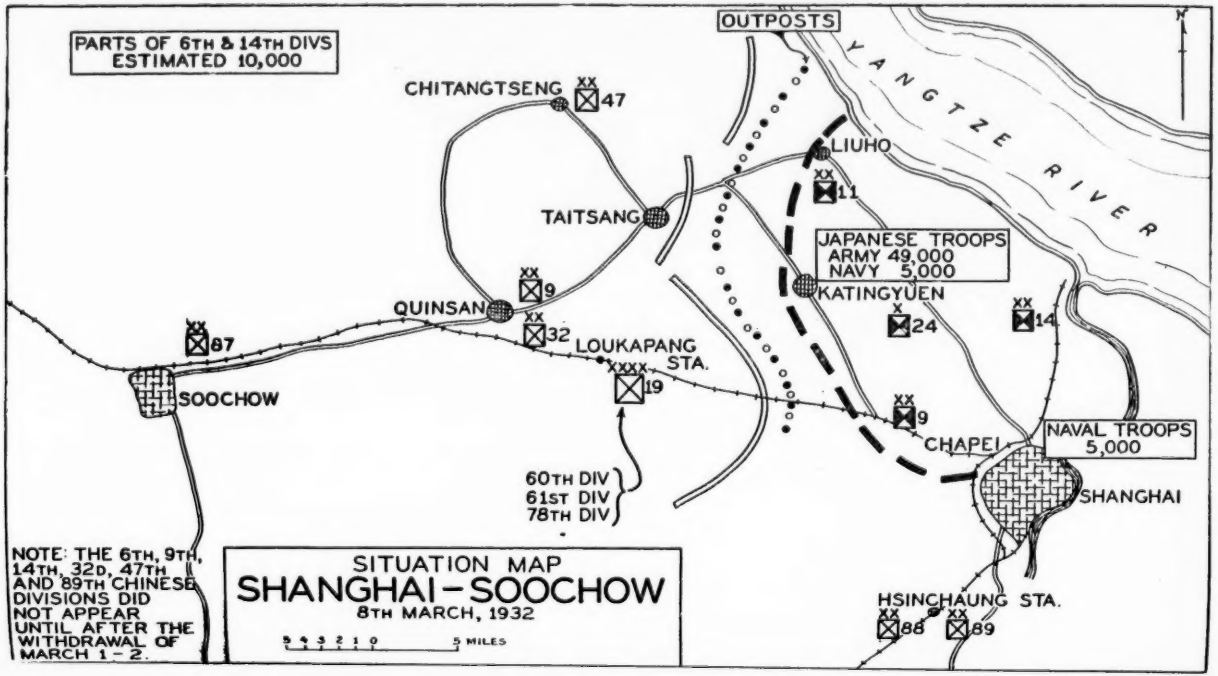
The Japanese continually underestimated the amount of resistance to be expected. They assumed that the Chinese would withdraw, particularly on the appearance of artillery and airplane bombs. Their previous experience with Chinese troops in Manchuria made such an assumption logical.

The Japanese did not show their usual dash and spirit. This was partly due to their surprise at the unexpected resist-

ance offered by the Chinese, but mostly because they were under strict orders to carry on the operations as economically as possible. There is no question that their morale was considerably shaken by the activity of snipers in their rear.

Coordination between Japanese infantry and artillery was very poor if not entirely nonexistent. Their tanks were ineffectual in the narrow streets of Chapei and were also unsuitable in the flat, open country, criss-crossed by creeks, ditches and canals.

Bombing operations from the air had very little effect upon Chinese soldiers. The Japanese planes usually flew at an altitude of 2,000 feet, dropping to 1,500 when releasing bombs. This is considered the minimum height for protection from .30 caliber machine guns on the ground. Flying was very conservative at all times and no chances were taken.


PARTS OF 6TH & 14TH DIVS
ESTIMATED 10,000
OUTPOSTS
YANGTZE RIVER
CHITANGTSENG
47
LIUHO
11
TAITSANG
JAPANESE TROOPS
ARMY 49,000
NAVY 5,000
KATINGYUEN
9
QUINSAN
32
24
14
87
LOUKAPANG
STA.
19
SOOCHOW
9
CHAPEI
NAVAL TROOPS
5,000
SHANGHAI
60TH DIV
61ST DIV
78TH DIV
NOTE: THE 6TH, 9TH, 14TH, 32D, 47TH AND 89TH CHINESE DIVISIONS DID NOT APPEAR UNTIL AFTER THE WITHDRAWAL OF MARCH 1 - 2.
SITUATION MAP
SHANGHAI - SOOCHOW
8TH MARCH, 1932
5 MILES
HSINCHAUNG STA.
88
89

MAP No. 3

Opposing Forces

Chinese:

Commander-in-Chief: General Tsai Ting-kai
19th Route Army:
60th Division: General Shen Kwan-han.....(11,000)
119th Brigade
120th Brigade
61st Division: General Mao Weh-hsu.....(12,500)
121st Brigade
122d Brigade
78th Division: General Shu-Zu-nien.....(10,000)
155th Brigade
156th Brigade
Artillery Brigade (mostly obsolete guns and trench mortars)
Total.....35,000

5th Route Army: General Chang Chih-chung
87th Division: General Lau Ching-yueh
174th Brigade
175th Brigade
88th Division: General Yu Tsi-shih
176th Brigade
177th Brigade
Independent Brigade (General Wang Ken)
Total.....27,000

Woosung Forts Garrison..... 2,500
Armored Trains..... 500

Grand Total.....65,000
Estimated casualties.....12,000

Japanese:

Commanding General: Lieutenant General Shirakawa

Army Troops:
1 Mixed Regiment Medium Artillery
3 Batteries 15-cm (5.9) Howitzers, 12 guns, horse-drawn
2 Batteries, 10-cm guns, 8 guns, tractor-drawn

Army Air Service:
3 Squadrons Bombers
1 Squadron Pursuit (Nieuport)
1 Squadron Reconnaissance

24th Mixed Brigade:* 3,000
4 Battalions Infantry
1 Squadron Cavalry
2 Batteries Mountain Artillery
1 Engineer Company

9th Division:* General Uyeda.....14,300
Tank Unit—15 tanks about 7 tons
Cavalry Detachment
One Battalion 15-cm Howitzers
9th Field Artillery, 75-mm Mountain Artillery
Heavy siege gun unit, 6-inch mortars
6th Brigade:
35th Infantry (3 Battalions)
7th Infantry (3 Battalions)

18th Brigade:
19th Infantry
36th Infantry

11th Division:* General Koto.....11,000
10th Brigade:
12th Infantry
22d Infantry
22d Brigade:
43d Infantry
44th Infantry
11th Cavalry
11th Engineer Battalion
11th Artillery Regiment
11th Army Service Detachment

14th Division:* General Matsuki.....21,000
27th Brigade:
2d Infantry
59th Infantry
28th Brigade:
15th Infantry
50th Infantry
18th Cavalry Squadron
20th Artillery Regiment
14th Engineer Battalion
14th Battalion of Army Service Corps

Grand Total.....49,300
Casualties..... 3,600

*NOTE: The 14th Division was fully mobilized, the 9th Division partially mobilized, while the 11th Division and 24th Mixed Brigade were presumably on a peace footing.)

MILITARY NEWS AROUND THE WORLD

BY

MAJOR E.M. BENITEZ, Coast Artillery Corps

GENERAL

ARMIES AND NAVIES

The Armies and Navies of the Principal World Powers, outside the United States, are estimated to be as follows:

Nation	*Standing Army*	*Air Force*	*Trained Reserve*	*Maximum Military Man Power*	*Air-planes*	*Tanks*	*Navy Tonnage*
*British Empire	390,291	46,600	632,053	18,000,000	4,000	750	1,232,800
France	708,000	34,350	5,500,000	8,000,000	3,000	3,000	546,000
Russia	1,500,000	50,000	19,450,000	32,000,000	4,700	3,500	200,000
Germany	650,000	80,000	1,850,000	13,000,000	3,000	2,300	300,000
Italy	1,111,593	201,300	5,214,368	8,000,000	3,200	2,000	529,000
†Japan	280,000	15,000	2,000,000	18,000,000	2,000	800	754,000

In general, in most countries the infantry division numbers from 12,000 to 15,000 men, of which some 60% are infantry, 15% artillery, and the rest, engineers, medical and supply. Some European countries have a second type of division, known as the mechanized or armored division, made up of motorized infantry, tanks, armored cars, motorized artillery, chemical troops and airplanes, numbering approximately 11,000 men. Italy still has another type division, the "Celere," or fast division, the composition of which is given elsewhere in this section.

The resurgence of Germany as a big military power in Europe, has driven Great Britain into a costly modernization and expansion of its air forces; it has compelled France to strengthen her frontiers and make substantial provisions for her air defense, while smaller countries, such as Switzerland, the Netherlands and Belgium, have decided to modernize their

*Includes the Dominions.
†Before the current Sino-Japanese War.

armies. Germany has been free to acquire the best materials. Her equipment is new and embodies, therefore, all modern improvements, outclassing those nations that have been tagging along with their old material, some of which dates back to the World War, or purchased shortly after.

Modern combat and mechanized weapons subject the lines of supply and military bases to constant danger of attack by the enemy. The service of supply must be organized to provide fully for the troops at the front under any and all circumstances. In this connection, the quartermaster's estimates of the daily food consumption of a division of 12,000 men, published in the *Reserve Officer*, November 1937, seem pertinent:

The quartermaster estimates that to give 12,000 men a beef stew it takes 2,800 pounds of beef, three tons of potatoes, 840 pounds of carrots, turnips and onions and 2,880 cans of tomatoes.

For a breakfast for the division: 12,000 apples, one for each man; 600 bags of rolled oats, 2,404 dozen eggs (17 dozen for each 100 men); 750 gallons of milk; 1,440 pounds of bacon; 12,000 pounds of bread and 560 pounds of coffee.

To provide beef once a day to soldiers over a period of thirty days, it takes from 40 to 74 pounds per meal for each 100 men, depending upon the type of meat to be served. Figuring on an average consumption of 55 pounds a day by each 100 men, the daily requirements for the 12,000 would be over three tons, and during the thirty days the 12,000 men would stow away 198,450 pounds—more than 99 tons!

ARGENTINA

Armed Forces:

The armed forces of the Argentine include the army, the military air force and the navy, the first two of which are under the control of the Ministry of War, while the third is under that of the Ministry of Marine.

The *Army* consists of the regular army, the national guard and the territorial guard; the Ministry of War is its supreme head.

The Air Force consists of three reconnaissance groups and one fighting group; there are no bombardment planes at pres-

ent, but it is expected that some will be acquired in the near future.

(*Armaments Year-Book, 1936, Revista Militar*, Argentina)

Navy:

The six destroyers under construction in England will be similar to the British G-class of 1,350 tons, speed of 35.5 knots, and are armed with four 4.7-inch guns, eight 21-inch tubes in quadruple mounts. Seven mine sweepers are being built in Argentine arsenals; they are 550 tons; speed, 16 knots and are armed with two 4-inch guns.

(*U.S. Naval Institute Proceedings*, October 1937)

AUSTRIA

Compulsory military system in Austria dates back to 1866. With the defeat of the Central Powers, it was discontinued at the end of the World War, was reestablished in 1936 and a reserve corps has been created. The army, in general, has been reorganized recently as shown below:

Army Reorganization:

A mixed brigade, of which there are seven in number, consists of the following units: two infantry regiments, one artillery regiment, one cavalry squadron, one communications company and a motor transport detachment.

The *infantry regiment* consists of a headquarters company, a communications and engineer company, a platoon of minenwerfers and three infantry battalions, each battalion being composed of a headquarters detachment, three rifle companies and one machine-gun company.

The *artillery regiment* consists of three battalions, each battalion being composed of three batteries.

A *cyclist battalion* consists of a platoon of minenwerfers, a communications platoon, two rifle companies and one machine-gun company.

The *cavalry* consists of two brigades of two regiments each, a horse-drawn artillery battalion and a combat engineer cyclist squadron.

The non-divisional units comprise the following elements:

1 Motorized group of portee infantry
1 Tank group
1 Motorized heavy artillery group
2 Antiaircraft artillery groups
1 Special engineer battalion (bridges).

The aviation consists of two regiments.

In addition to the seven brigades, above mentioned, there are seven regiments of frontier guards, each consisting of from three to four battalions.

(*Militär-Wochenblatt*, 26 February 1937)

Fast Division:

The organization of the *Schnelle* Division follows the same general lines of the Italian *Celere* Division. It consists of the following units:

1 Headquarters and Staff
1 Telegraph battalion, motorized
1 Armored-car battalion
1 Brigade of motorized infantry of four battalions
1 Cavalry brigade of two regiments of dragoons
1 Artillery group, motorized (two batteries, to be increased later on to a regiment).

The armored-car battalion is for division reconnaissance and motorized antitank defense.

(*Revue d'Artillerie*, June 1937)

BELGIUM

At the end of 1936, the strength of the Belgian army was 75,000 men. By a recent agreement, Belgium has been released by both Great Britain and France from the Locarno Treaty obligations of 1925 and the Anglo-Franco-Belgian agreement of 19 March 1936, by which Belgium promised to defend Britain and France against attack. In October 1937, the German government officially announced its readiness, just like the British and French governments, "to grant assistance to Belgium in case she should become the object of aggression or invasion." Belgium has thus resumed approximately her 1914 status. So long as Germany remained helpless and disarmed by the Treaty of Versailles, Belgium's interests required an

alliance with France; but with the repudiation of that treaty, she could hardly continue such alliance without antagonizing Germany. Belgium's diplomatic victory has been joyously received throughout the nation.

BOLIVIA

Tanks were employed in a South American war, for the first time in history, by Bolivia in the Chaco War. Paraguay had none.

(*Revista del Ejército*, Mexico, March 1937)

BRAZIL

The Brazilian armed forces comprise the army, the military air force and the navy.

The Brazilian army consists of the regular army, the army reserve and the territorial guard.

Brazil is divided into nine districts, each comprising one or more of the Federated States. The army is composed of five infantry divisions, three cavalry divisions and one mixed brigade. The Air Force consists of 33 airplanes, exclusive of school airplanes which may be fit for training purposes only.

Military service is compulsory for every Brazilian above the age of 21.

The Navy has 2 battleships, 2 cruisers, 1 coast defense vessel, 8 destroyers and 1 (plus 6 building) submarine and 8 naval war planes.

(*Armaments Year-Book, 1936*)

On 2 October, President Vargas declared a "state of war" in Brazil for a period of 90 days to combat communism. A bill was passed by the Senate suspending the usual constitutional guarantees. Presidential elections scheduled to be held on 3 January 1938 have been suspended indefinitely.

(*Press Reports*)

Navy:

Brazil has just accepted six submarines ordered at the beginning of last year in Italian shipyards. An explosion oc-

curred in one of these ships, *Humayta*, while undergoing trials which seriously injured 20 people including 2 officers, causing also extensive material damage. Construction has been begun on the gunboat *Paraguassu* in Rio de Janeiro.

(*Naval Institute Proceedings*, November 1937)

BULGARIA

The post-war treaty of Neuilly, signed in 1919, limited Bulgaria's armed forces to 33,000 men, considered sufficient as an internal police force. Recent military maneuvers revealed that Bulgaria's modern army and equipment is extensive. King Boris III arrived in London on 31 October for a week's visit, and it is understood that he is seeking legalization of his large modern army under the Treaty of Neuilly. It is claimed that the number set by the treaty is insufficient to maintain order in a turbulent Balkan state and that the subsequent serious disturbances in Bulgaria are due to this fact.

(*Associated Press*)

CHINA

Army:

The Chinese army is composed of divisions and corps, organized on the pre-war German basis. At present, there are approximately 80 German military advisers with the Chinese High Command, for military training purposes only. The Army school has been moved from Canton to Nanking. Cavalry units are few in number; the field artillery has but 1,900 guns, of which not more than 1,000 are usable; antiaircraft defense is insufficient; chemical warfare has just begun to enter Chinese strategy; the infantry is armed with rifles of all makes and ages. While China could mobilize 2,500,000 men, she has serviceable weapons for less than a million only.

In regard to *aviation*, until 1927, most of the training was done by Chinese; since then the Government has enlisted the aid of foreigners. When hostilities broke out at Shanghai, the Chinese had 500 airplanes, of which 100 were obsolete, 150 were old types that, nevertheless, could be used; of the remaining 250, 80 were pursuit planes, 80 were light bombardment and the remaining 90 were moderately heavy bombardment.

Arsenals:

The daily capacity of the large arsenals for manufacturing small-arms ammunition is as follows:

Hangchow	200,000 rounds
Hanyang	130,000
Nanking	70,000
Tsinanfu	60,000
Taiynanfu	10,000-40,000

(*Foreign Affairs*, October 1937)

COLOMBIA

The reorganization of the army began in 1935. Under the Decree of 28 August 1934, the Colombian Army is to consist of 5 brigades, 1 Amazone (River) Detachment, 1 Guard of Honor battalion and 1 signal battalion.

Aviation comes under the War Ministry; the Air Force is being trained by foreign pilots, most of them German. There is an up-to-date flying school at Cali, near the West Coast, at Palanquero, on the Magdalena River, and at Barranquilla, on the Caribbean. Aviation is making great strides, and there are regular air services between Bogota, the capital, and the main cities in the interior and the coasts.

(*Armaments Year-Book, 1936*, and other sources)

CHILE

Aviation:

Sixty airplanes bought by the government from Italy are expected to arrive soon.

At present, a fleet of ten Italian planes, under command of General Longo, is making a good will tour of South America. It was reviewed by President Alessandri on 23 October in Santiago, whence it will fly in mass formation over the Andes to Mendoza and then on to Buenos Aires.

(*New York Times*, 24 October 1937)

Navy:

The Chilean government has asked for bids from shipbuilders of several countries for building an 8,000-ton cruiser

and a 6,000-ton school ship. The government has also under consideration the modernizing of some older war vessels.

(*Naval Institute Proceedings*, November 1937)

COSTA RICA

The standing and active army was limited to 500 men by the Convention of Central American States in 1923. In 1932, the strength of the army was 58 officers and 260 men.

(*Statesman's Year-Book, 1937*)

CUBA

The army is composed of 1,015 officers and 14,614 men, organized in 6 cavalry regiments, 4 infantry battalions and 3 batteries with auxiliary services. The navy consists of 2 cruisers (*Cuba* and *Patria*), 5 gunboats, an armed transport, and about a dozen coastguard vessels of small size. The strength of the navy is 2,508 men, 130 officers and 25 cadets. The air force consists of 116 men. Unofficial estimates place the personnel of the army, navy and police at 20,000 men. Reservists number 30,000.

(*Statesman's Year-Book, 1937*)

CZECHOSLOVAKIA

Army:

With a population of about fifteen million, the regular army has a strength of 210,000 men. Of the 180,000 recruits incorporated in 1936, 55% (95,000) are Czechs; 22% (44,000) are Southern Germans; 14% (25,000) are Slavs; 5½% (10,000) are Magyars and 3½% are Poles, Ukranians or some other nationality.

(*Deutsche Wehr*, No. 47, 19 November 1936)

Doctrine and Organization:

The army makes the following distinctions: Mechanized army cavalry divisions, corps reconnaissance units, and division reconnaissance units.

The *Mechanized Division* is to be employed directly under the Army Commander and consists of the following units:

2 Regiments of portee cavalry and one battalion of portee infantry, inclusive of antitank and antiaircraft guns
1 Regiment of motorized artillery, of three battalions as follows: two battalions of 100-mm howitzers and one battalion of 80-mm guns
1 Mechanized regiment of one armored-car troop and two tank battalions of three tank companies and one armored-car troop each
1 Motorized antitank company and one antiaircraft battery
1 Motorized engineer company
1 Motorized signal company.

Corps Reconnaissance Units:

1 Regiment of portee cavalry of two squadrons: one on motorcycles and the other on trucks, inclusive of antitank and antiaircraft guns
1 Battery or battalion of motorized field artillery (2 batteries of 100-mm howitzers and one battery of 80-mm guns)
1 Mechanized battalion of two tank companies and one armored-car company.

Division Reconnaissance Units:

1 Squadron of horsed cavalry, one heavy machine-gun platoon, one platoon of two antitank guns
1 Cyclist battalion, with one antitank platoon
1 Tank company, of two tank platoons and one armored-car platoon
1 Battery of field artillery, either horse-drawn or motorized.

(*Militär-Wochenblatt*, 11 June 1937)

Air Lines:

It is reported in the local press that an air agreement between Germany and Czechoslovakia has just been concluded, regulating civil air traffic and establishing air corridors. Germany desires to establish air communication between Berlin and Vienna, via Czechoslovakia and to Munich, via Bratislovia.

Czechoslovakia is, in turn, interested in the Amsterdam—Brussels—Zurich lines.

(*Royal Air Force Quarterly*, October 1937)

DENMARK

Army:

A recent decree, approved by Parliament at Copenhagen on 4 February 1937, reorganizes the army as follows:

Infantry.—The infantry will consist of eight regiments, one of which will be a cyclist regiment of two battalions. An engineer unit of 500 men will be ultimately organized, to be stationed south of Jutland and its primary mission will be to erect obstacles and prepare demolitions.

The infantry regiment will consist of three rifle companies, a machine-gun company, a miscellaneous company of sixteen minenwerfers and four 20-mm antitank guns.

The cyclist regiment will consist of two battalions of four companies of 150 men each, equipped with sixteen light machine guns.

Cavalry.—The cavalry will retain its two regiments, each of which will consist of the following:

8 Cavalry squadrons
6 Cyclist squadrons
2 Squadrons of armored cars
2 Antitank squadrons, equipped with 20-mm antitank guns.

Artillery.—The artillery will consist of three regiments of field artillery, a total of four groups—two motorized and two horse-drawn. The antiaircraft artillery will consist of a regiment of three battalions, of three batteries each, making a total of 36 antiaircraft guns in the regiment.

Engineers.—The engineers will consist of two sapper battalions of three companies each and a communications platoon.

Aviation.—The aviation will consist of two groups of two squadrons each, a squadron having from twelve to eighteen planes.

(*Bulletin Belge des Sciences Militaires*, July 1937)

ECUADOR

On 22 October 1937, President Federico Paez presented to Congress his resignation as President of the Republic. At the request of army officers, General Alberto Enriquez, War Minister in the Paez Cabinet, accepted the Presidency until a new Congress, elected by all political factions, shall be installed. Paez became president of Ecuador in September 1935, following a series of political disturbances that had resulted in the resignation of two Presidents.

(*New York Times*, 24 October 1937)

EGYPT

Army Organization:

The old recruiting law provided military service for all Egyptian citizens from 19 to 27 years of age. The new law, approved 9 February 1936, prescribes military service, beginning at 18, for all Egyptians, Bedouins, and Sudanese living in Egypt. The length of service will be five years on active duty and five years in the reserve.

The army is composed of a General Staff, three infantry brigades (total of eleven battalions), two cavalry squadrons, four artillery batteries (mule-drawn), one artillery battery (garrison), one mechanized machine-gun battery, one engineer company and quartermaster, medical, transportation and remount troops. The infantry battalion has four companies with from one to six machine guns each. Six infantry regiments are now being organized, all with British equipment. The aviation has one squadron of thirty airplanes.

In 1935-1936, the army consisted of 582 officers and 12,770 men; the new law will raise the total number of men to 18,000.

The Navy consists of four patrol boats ranging from 600 to 2,600 tons, a school ship and a transport of 1,290 tons. Several of the officers have attended schools in England.

(*La Revue Militaire Egyptienne*, and *Bulletin Belge des Sciences Militaires*, June 1937)

New Egyptian Army:

The British military mission under Major General Marshal Cornwall will be strengthened by fourteen additional officers, bringing the total up to eighteen. This will make it possible to start new specialist schools which are essential for training the new cadres.

The first schools to be created are: an Artillery School, which will give special attention to antiaircraft work; an Engineering School, which will specialize in bridging; and a Motor Transport School, which will train drivers for all branches of the service. The existing Musketry School is being enlarged and equipped to give instruction with machine guns.

The army will be equipped with modern military weapons of British make.

Expansion in the Egyptian Air Force is being supervised by Royal Air Force personnel. One British officer is to become Advisor to the Ministry of War and another will act as Staff Officer to the officer commanding the Egyptian Air Force. Besides these officers, a British officer will be attached to each squadron as it is formed, together with a certain number of British warrant officers as supervisors and instructors. An offer to establish both an aircraft factory and a munitions factory in Egypt is being examined at the present time, the Egyptian government apparently desiring to be as independent as possible in regard to war supplies and munitions.

(*Canadian Defence Quarterly*, July 1937)

FRANCE

Defensive Strategy:

France has a population of 40,000,000, as compared with Germany's 65,000,000 and Italy's 40,000,000. Her plan is to make the utmost effort to strengthen her system of fortifications and to push her arms scheme. The Maginot Line, built at an estimated cost of $2,000,000 a mile, is being extended along the Belgian and Swiss border. France hopes that this line of steel and concrete will prove an impregnable defense from the Jura Mountains to Dunkerque; in fact, so strong that a German attack would be discouraged in advance. Along the Italian frontier, no "line" is needed because of the mountainous character of the country'*

Industrial Organization:

Under the Expropriation Law, passed in 1936, the French armament industry is being nationalized. Totally or partially,

*The Versailles Treaty forbade the employment of tanks by Germany. With the repudiation of that treaty, France is giving serious thought to antitank defense, by means of antitank weapons and utilization of natural and artificial obstacles to their fullest extent.—*Editor.*

all enterprises engaged in manufacturing or trading of war munitions will pass into the hands of the government. The great Schneider arms works at LeCreusot, the Hotchkiss machine gun plant, the Brandt arms factory, and that part of the Renault works which manufactures tanks, have already been seized, and others, including the naval shipyards, will probably soon follow.

Army:

It consists of 708,000 officers and men, including colored troops in North Africa and the French colonies, of which half a million are stationed in fortresses near the eastern borders. Reserves amount to 6,000,000 and 2,000,000 more can be mobilized in the colonies. The French Army, considered among the finest in the world, is well provided with modern artillery and with the latest type of mechanical weapons.

Navy:

Next to Great Britain, France's navy is the strongest in Europe. Her new naval budget will call for two more capital ships of 35,000 tons, two airplane carriers and two more 8,000-ton cruisers. Four battleships: the *Dunkerque, Strasbourg, Richelieu,* and *Jean Bart,* are under construction.

Air Force:

France has 3,000 planes of which only one-third are modern, and there is no reserve. An armada of 1,500 first-line planes, with a 50% reserve is planned; but the completion of her air defense program cannot be expected by the end of this year.

(*Current History,* October 1937)

The Motorized Division:

The French motorized division is organized as follows:

1 Air squadron of 12 planes
1 Tank regiment of two battalions—one of light tanks and one of heavy tanks
1 Infantry regiment of two motorized battalions, one motorcycle battalion and two companies of motorized antitank guns
1 Artillery regiment of four motorized groups (one group of which is of 105-mm guns and one of antitank guns)

1 Reconnaissance battalion of four companies, one company of armored cars, one of accompanying weapons and two motorcycle companies
1 Artillery group of two batteries
1 Engineer battalion, motorized
Quartermaster and Medical troops, motorized.

(*St. Christophorus*, and *Rivista di Artiglieria e Genio*, January-February 1937)

Portee Dragoons:

According to reports, the portee dragoons will be reorganized as follows:

The group will consist of one headquarters platoon, three rifle squadrons and one machine-gun squadron.

The rifle squadron will consist of a headquarters section and four platoons. Each platoon will have a headquarters group and three combat groups. The combat groups will be provided with light automatic rifles and one rifle squad. The squadron will have thirty light vehicles and from eight to ten motorcycles.

The accompanying weapons squadron will have four machine-gun platoons of six machine guns each, one platoon of 37-mm guns and two minenwerfers. The squadron will also be provided with thirty-six motor cars and from eight to ten motorcycles.

(*Militär-Wochenblatt*, No. 41, 1937)

Armored Cars:

The following armored cars are used in the French Army:

(1) Armored Car "Berliet U.D.B.4".—Four-wheel car; armor, 7-mm–9-mm; crew, four men; 42 horsepower motor; speed on roads, 60 kilometers per hour; weight, 4.5 tons; radius of action, 200 kilometers on roads and 150 kilometers, cross country.

(2) Armored Car "Berliet U.D.P.B."—This car has a 50 horsepower motor; speed on roads, 75 kilometers; armament, two machine guns, one of which is suitable for antiaircraft defense; crew, four men; weight, 3.5 tons; radius of action, 450 kilometers on roads or 350 kilometers cross country.

(*Neue Kraftfahrer-Zeitung*, 29 April 1937)

Staffs' Shelter:

A large gas and bomb-proof shelter is being built just outside the Air Ministry for the use of the staff and a large shelter

is being dug under the courtyard of the Ministry of Marine for the same purpose. The conclusion seems to be that the French are giving serious thought to the shelter of the staffs of the Public Services in case of emergency.

(*Royal Air Force Quarterly*, October 1937)

GERMANY

On 16 March 1935, Germany repudiated the armament clauses of the Treaty of Versailles. The strength of the German Army on 1 January 1934 was 102,000 all ranks.

The German Army of 1937, generally estimated at from 650,000 to 700,000 men, has been rebuilt on the scheme of the Old Imperial Army and, in addition thereto, is highly mechanized and motorized. It is organized into three Army Groups: Berlin, Kassel and Dresden. When the new defensive force was brought into being in March 1935, the law creating it provided that "the German peace army, including the police units that have been incorporated in it, shall comprise twelve corps commands and thirty-six divisions." However, it was not long before a thirteenth corps was added to the original twelve. Its headquarters is Nuremberg and it is commanded by General Maximilian von Weichs, whose appointment dates back from last October 12. A fourteenth corps is now being created and its headquarters will probably be Wuerzburg in Lower Franconia. For the present, this new corps will only consist of corps headquarters with a certain number of corps troops, which will be taken from the corps already existing. The German tendency is to create more and more new corps, thus establishing the machinery for handling large numbers of men in case of a general mobilization.

A German Army Corps comprises 45,000 men. In addition to the 36 divisions above mentioned, Germany has three armored divisions of 10,000 men each and an Air Force of about 80,000 men.

The Staffs are composed of brilliant officers who stood their test in the World War. It is generally conceded that the personnel of the Army, Navy and Air Force is extremely fit and well equipped. Germany has had an opportunity to test her equipment in Spain. It has been shown in that Civil War, that the German tank and the German battle plane are not as effi-

cient or as fast as the Russian, though the German antitank gun and the antiaircraft gun is probably the best that has been tried out in war.

(*Current History*, September 1937; *New York Times*, 28 October 1937 and other sources)

The *Infantry Division* consists of the following units:

3 Regiments of infantry of three battalions, each of three infantry companies, one heavy machine-gun company and one trench mortar company
2 Regiments of field artillery, one of which is a motorized regiment of medium artillery
1 Antiaircraft battalion, composed of three batteries of 88-mm guns, one battery of six 37-mm guns and one machine-gun battery
1 Reconnaissance group consisting of 12 armored cars, half of them equipped with 20-mm guns, 3 armored cars equipped with radio, one antitank company of twelve 37-mm guns and one motorcycle company
A communications detachment of two telegraph companies and one motorized radio company
A sapper battalion and two mounted sapper companies
An antitank battalion of three companies
Medical, quartermaster, motor transport troops.

The *Infantry Regiment* consists of regimental headquarters, with one cavalry troop attached, three infantry battalions of three rifle companies and one machine-gun company each, one mine-thrower battery and one antitank battery of 37-mm guns. This antitank battery has a command section, a liaison and combat train section and three combat platoons of three guns each, the guns being mounted on small fast (90 km. p.h.) vehicles, capable of cross-country travel, each manned by a crew of four men. The combat platoon consists of one officer, five noncommissioned officers and 26 men.

(*Krasnaya Zvesda*, June, July 1937)

The Armored Division:

Originally, the armored division had from 500 to 600 armored vehicles. It was found that this number was excessive. The number of divisions will be increased from three to six and each one will have six regiments as follows:

*2 Tank regiments
2 Regiments of mechanized infantry
2 Regiments of motorized infantry.

In addition, the following troops will be attached to the division:

1 Sapper battalion
1 Signal corps battalion (radio and telegraph)
1 Airplane squadron.

The main armament of the division will be the light tanks of 1.8 and 8 tons, capable of making 40 kilometers per hour cross-country. The organic infantry of the division is provided with two types of tanks: one of three tons, four-wheels, with a light machine gun and a crew of four men; the other, a medium tank weighing about eight tons, six-wheels, provided with a gun and a heavy machine gun, and with a crew of three men—the gunner, the machine gunner and the driver.

(*Rivista di Artiglieria e Genio*, July-August 1937)

Cavalry Division:

The German cavalry division is organized as follows:

1 Tank brigade of 448 tanks (2 regiments of 2 battalions each, each battalion of four companies and each company of four sections of seven tanks each).

1 Brigade for reconnaissance and occupation of position, consisting of the following units:

1 Armored-car reconnaissance detachment
1 Motorized infantry regiment
1 Motorcycle battalion
1 Regiment of artillery.

(*Revue de Cavalerie*, July-August 1937)

Aviation:

The army aviation is divided into:

Reconnaissance aviation
Pursuit aviation
Bombardment aviation.

Reconnaissance aviation includes two types of flights:

"F" flights: For strategical reconnaissance, attached to armies and groups of armies.

*200 tanks each.—*Editor*

"H" flights: For tactical reconnaissance, attached to corps and sometimes to divisions.

The pursuit group of three flights of nine planes each, is the tactical unit. Pursuit formations operate under control of the army commander.

The heavy or light bombardment group is the tactical unit, each group consisting of three flights of nine planes each. Bombardment aviation is intended for employment on independent tactical or strategical missions.*

(*Viestnik Vozushnovo Flota*, Moscow, February 1937)

Mechanization:

Giant tractors that carry twelve men and haul big guns are replacing the horse-drawn field pieces in Germany's mechanized army.

(*Volkischer Beobachter*, Germany, June 1937)

Navy:

The strength of the navy, by June 1941, according to the figures issued by the German Admiralty last July, will be as follows:

5 Battleships of 26,000 to 35,000 tons
3 Pocket battleships of the Deutschland class
2 Aircraft carriers
14 Cruisers
42 Destroyers.

In addition to the above vessels, the navy will have a number of heavy-tonnage torpedo boats and submarines with a total tonnage of about 23,000.

(*Current History*, September 1937)

GREAT BRITAIN

Army Reorganization:

The development of the airplane and other weapons of modern warfare has done away with that traditionally protective barrier: the English Channel. The British realize that the Navy does not give the protection that it did years ago and have come to the conclusion that the reorganization of the

*NOTE: The tendency in German planes seems to be for the higher speed medium bombers, something in the class of the British "Blenheim," in preference to the very large bomber.

army to meet modern requirements is essential. This has caused a general reorganization of the British Army, a tremendous expansion of the Royal Air Force, elaborate preparations for the aerial defense of vital areas and industrial centers and a general modernization of the army as given hereon below.

(*Press Reports*)

The *infantry battalion* will have four companies and one cannon platoon. The company will have four platoons, each platoon having two squads of light machine guns.

The *division machine-gun battalions* will each have three machine-gun companies and one antitank company. Each machine-gun company will have one motorized platoon of two sections, each section of ten men. All non-armored vehicles now in use will be substituted for armored ones.

The *antitank company* will consist of four platoons, of three motorized antitank guns each. Only a certain number of companies, so far, have received this equipment.

Four new tank battalions have been organized; one of them was ordered to Cipres, another to Hong-Kong, and the remaining two—the 7th and 8th—have been assigned to a newly constituted tank brigade. There is now a tank battalion available for each division.

The division cavalry regiments have been mechanized.

The two cavalry brigades will each have two regiments of light cars and one battalion of mechanized infantry, thus giving a remarkable fire-power to the brigade.

It is expected that by the end of 1937, the total motorization of the artillery of the three divisions will have been completed.

(*Bulletin Belge des Sciences Militaires*, June 1937)

Infantry Division:

The infantry division which formerly consisted of three brigades of four battalions each, will, henceforth consist of three brigades of three battalions each. All trains will be motorized, mainly with ¾-ton trucks. The division artillery, likewise motorized, will be equipped throughout with a new field piece —a combination of gun and howitzer—said to be about 80-mm caliber and possessing a range of six miles.*

*NOTE: According to the *Militär-Wochenblatt* (25 December 1936), the British Infantry Division will have 36 guns and 144 antitank rifles. It is believed that this rifle is approximately a 0.68-inch caliber, probably with a muzzle velocity of 2500-3000 f/s, which should enable it to penetrate close to one inch of medium armor upon normal impact at 500 yards. (*Mailing List*, Infantry School)

The *Mobile Division* (Mechanized Cavalry Division), will consist of the following units:

2 Mechanized cavalry brigades
1 Light tank regiment
1 Armored-car squadron
Motorized artillery
Special troops.

The Mechanized Cavalry Brigade will consist of:

2 Light tank regiments
1 Mechanized infantry battalion.

(*Militär-Wochenblatt*, 2 July 1937)

Mechanized Cavalry Brigade:

Light tank regiment.—The light tank regiment that will be tested in maneuvers this year will consist of:

Regimental headquarters—the administrative element—and an antitank troop of four two-pounder guns. The latter will provide the main protection against hostile armored vehicles and it will be supplemented by the antitank rifles, with which every troop will be equipped.

Three squadrons.—Each squadron will have an administrative element consisting of a squadron headquarters with three light tanks in addition to a carrier, a truck and several motorcycles.

The fighting element of the squadron consists of three troops, each troop of five light tanks and two tracked carriers, with armor in front.

As a result of this organization the regiment will include two kinds of mechanized cavalry: those who fight mounted in light tanks, and those who are borne in armored carriers from which they dismount when needed for action.

The *Mechanized Rifle Battalion* will consist of a headquarters company and four rifle companies, each company of four platoons, and each platoon of three sections. One of the platoons in each rifle company will be a scout platoon, which will consist of a platoon headquarters and three patrols of nine men mounted in three small armored carriers, moving on caterpillar tracks. These carriers will each mount a Bren gun, and carry an antitank rifle, in addition to their crew of three men.

The rifle platoons will be similar to the ordinary ones, except that they will have more transport. Each section will

have its own truck, to carry its men as well as their weapons and equipment. In addition, platoon headquarters will have a truck and a motorcycle.

The headquarters company will differ still more from that of the normal rifle battalion. In place of the mortar platoon and the antiaircraft platoon, which the ordinary rifle battalion has, the headquarters company of the mechanized rifle battalion will have two antitank platoons. These, as well as the signal and administrative platoons, will be carried in trucks, and there will also be a number of motorcycles.

(*Canadian Defence Quarterly*, July 1937)

Aviation Camouflage:

The British have devised a new scheme for camouflaging bombardment planes, to prevent enemy observation, called "shadow shading." The upper part of the plane is painted green and brown, while the lower part is painted dark blue, to render it difficult of detection by searchlights. Trials already conducted, using this method of camouflage, have indicated satisfactory results and, during recent maneuvers, bombers so camouflaged could hardly be discovered at even short distances. Airplanes for home defense will retain their aluminum color, which renders them of easy identification by friendly antiaircraft batteries and searchlights.

(*Deutsche Allgemeine Zeitung*)

Antiaircraft Cruisers:

The British Navy Yearbook discloses the fact that there are three escort ships for antiaircraft defense now in the process of construction. They will be called the *Bittern*, *Egret*, and *Heron*, all of 1,190 tonnage, speed of 18 knots per hour, all armed, exclusively, with antiaircraft guns.

(*Rivista di Artiglieria e Genio*, June 1937)

Airplanes:

Press reports credit the Blenheim monoplane with a speed of 250 miles per hour and possibly 300 miles per hour, on short bursts.*

The new type of bombers, ordered in quantity under the expansion scheme, will be the Handley Page Harrow heavy

*NOTE: The British claim that nobody can touch the Blenheim for sheer speed. It carries less fuel than other machines; but, in their opinion, it is so much faster that it will go farther while it is in the air than other machines with greater capacity.

bomber. This is a twin-engine high-wing monoplane, with a maximum speed of 200 miles per hour at an altitude of 10,000 feet, has a cruising range with normal load of 1,250 miles. The total weight of the machine is 23,500 pounds of 10½ tons.

(*United Services Review*, 26 August 1937)

Tanks:

The light tank "Vickers" is of an octagonal shape, weighs 3.81 tons, has a crew of two men, is equipped with one 7.7-mm or 12.7-mm machine gun, and has a radius of action of 180 kilometers.

(*Krasnaya Zvesda*, 10 March 1937)

The medium combat tank Vickers, with which the large mechanized units will be equipped, will be provided with a 200 horse-power motor, maximum speed of 45 kilometers per hour, radius of action, 180 kilometers; can climb a 45 degree slope, has a crew of six men, and is equipped with one 37-mm gun and one machine gun in the upper turret and two machine guns in the lower turret.

(*Neue Kraftfahrer*, and *Bulletin Belge des Sciences Militaires*, May 1937)

Torpedo Boats:

One of the most interesting exercises to be held during the Mediterranean autumn cruise will be that of the Motor Torpedo Boat flotilla. An end-on craft, less than 70 feet long and very narrow-gutted, is a very small target and, veiled in the smother of spray flung by a speed of 50 knots, she is not likely to be clear, either. It is true that she must work against pretty heavy odds to deliver a 21-inch torpedo right into the bilge of an enemy battleship; but considering the brief moments that she will be within striking distance of her chosen victim, the probabilities of escaping from being hit or sunk outright, are, at least, as good as the aerial torpedo bomber, swooping into a veritable storm of antiaircraft guns and machine guns. The destroyer has become too big and too costly to be dedicated to torpedo work in war-time, and there is a more urgent demand for its use for trade protection than attached to the fleet for a general action which may never come.

(*Canadian Defence Quarterly*, October 1937)

GREECE

Armed Forces:

The Greek Army is composed of four army corps, with headquarters at Athens, Larissa, Salonica and Cavalla, respectively; 10 infantry divisions attached to army corps; 3 infantry divisions attached directly to the Ministry of War and one cavalry division of two brigades.

The air force is divided into ten groups, each group of three flights, making a total of 120 planes.

Every citizen is liable to personal military service, upon reaching the age of 21, for 24 months' service, which, however, may be reduced to 18 months by the Ministry of War.

The Navy consists of one battleship, 2 cruisers, 21 destroyers and torpedo boats and 6 submarines, a total tonnage of 40,000.

(*Armaments Year-Book, 1936*)

Navy:

At the beginning of the year, the Greek government ordered two destroyers from the Yarrow firm at Glasgow. These ships were laid at the beginning of February. The Reuter agency has announced that the guns would be supplied by a German firm. It is also stated that the two small submarines will be ordered from Krupp Germania.

(*Naval Institute Proceedings*, November 1937)

GUATEMALA

The Guatemalan Army is divided into an active army and a reserve. The active army is subdivided into a regular force and a territorial force.

The strength of the standing army in 1936 was 5,980 all ranks, organized in 2 infantry corps of 14 companies and 4 groups of artillery. Military service is compulsory between the ages of 18 and 50. Service in the regular army is for 1 year in the infantry and cavalry and 2 years for artillery and engineer corps.

The army has military schools for training of officer cadets, noncommissioned officers and officers and a General Staff Academy where regular officers are trained for high command and general staff duties.

(*Armaments Year-Book, 1936; Statesman's Year-Book, 1937*)

HONDURAS

Under the terms of the Washington Central American Convention of 1923, the size of the regular army is fixed at 2,500 men, including the National Guard. The strength in 1936 was approximately 306 officers and 1,636 men.

In 1934, the army was composed of 23 infantry companies and 9 machine-gun sections, 1 artillery battery and 3 airplanes. Eight additional planes were bought by the Government in 1936. The establishment of a school of military aviation is contemplated.

(*Armaments Year-Book, 1936; Statesman's Year-Book, 1937*)

HUNGARY

The armed forces of Hungary consist of the land army, under the control of the Ministry of National Defense. There are seven mixed brigades, two independent cavalry brigades, 5 artillery batteries, 5 engineer battalions and one armored-car detachment. The Hungarian army has no reserves. Recruiting system is based on the voluntary enlistment. In accordance with the Peace Treaty at Trianon, Hungary has no air force. The total strength of the army is 35,000 men.

(*Armaments Year-Book, 1936*)

ITALY

The Italian armed forces consist of the home troops and the colonial forces. The home forces are under the War Ministry; the colonial forces are under the Ministry of the Colonies, while the Air Force, which is a separate arm, is under the Air Ministry.

The Army is composed of 13 army corps of 2 or 3 divisions, forming a total of 31 divisions; 3 "fast" divisions of one brigade each and 4 Alpine commands. An army corps includes, in addition to divisions, troops organically and directly attached to it. Troops not organically attached to the corps, such as the Bersaglieri, Alpine troops, cavalry, heavy artillery, coast artillery, and certain engineer units, are attached to these corps when the said troops are stationed in their territory.

With one of the finest armies in the world today, there is a decided tendency in Italy towards motorization. In the forth-

coming maneuvers, motorized, mechanized and fast (celere) divisions, the composition of which is given hereon, will be thoroughly tested. The concensus of opinion among Italian military leaders favors decentralization of artillery in the fast divisions and adoption of the simplest and quickest methods of preparation of fire.

The Council of Ministers, which met on 10 April, approved a bill creating a Supreme Command of the armed forces in Italian North Africa. This command will consist of an officer commanding and a staff of officers composed of officers from all three forces. The Governor General of Lybia, when a member of one of the fighting forces, will be the commanding officer of the fighting services in Lybia.

(*Royal Air Force Quarterly*, October 1937; *Armaments Year-Book, 1936*)

Air Strategy:

According to statements of General Valle, Under-Secretary for Air, the center of gravity in the air strategical field has shifted from the valley of the Po towards the Mediterranean, the Red Sea and the Indian Ocean. Accordingly, the air bases in Sicily, Sardinia, the Aegean Islands, Pantellaria and Tobruk have been strengthened.

(*Royal Air Force Quarterly*, October 1937)

Motorized Division:

The motorized division is an infantry division on motor vehicles and, therefore, capable of swift movements over roads. Its numerical inferiority in strength has been compensated by additional fire-power. On the march, it is preceded by a motorcycle unit for removing obstacles and assuring a free passage to the division.

It is not suitable for sustained effort, it moves fast, is aggressive in action and may be successfully utilized in situations that require a rapid and overwhelming effort. It may be employed for (1) prompt occupation of important positions; (2) in cooperation with fast (celere) moving divisions; and (3) as reserve. Its organization is as follows:

1 Division Headquarters
2 Infantry regiments (motorized) each composed of
    1 Regimental headquarters

2 or 3 battalions of three rifle companies and one heavy machine-gun platoon
Motor transport and service troops
1 Battalion of 4 heavy machine guns, motorized
1 Battalion of light tanks, consisting of:
1 Battalion headquarters
3 Light tank companies, each company of three platoons, one of which is a flame-thrower platoon. The number of tanks in the battalion is from 46 to 48, allocated as follows: 34 fighting tanks, 12 flame-throwers
1 Company of 81-mm guns, motorized
1 Company of 47-mm antitank guns, motorized
1 Battery of 20-mm antiaircraft (eventually), motorized
1 Chemical platoon, motorized
1 Artillery regiment, motorized, composed of:
Regimental headquarters
2 Groups of 3 batteries of 4-75/27-mm guns each, these guns to be gradually replaced by 75/10-mm howitzers
1 Group of 2 to 3 batteries of 4-100/17-mm howitzers each
1 Regimental depot.

Fast Division (celere):

The new Italian Fast Divisions (celere) are units for reconnaissance and maneuver. Each division consists of:

Units for actions requiring flexibility and rapidity: cavalry, motorcycles and fast tanks
Units required for combat: cyclist units, motorized units and artillery
Engineer and Service units.

The division motorized elements must be capable of occupying a position and should be able to hold it until the arrival of a normal division.

(*Revue d'Artillerie*, June 1937)

Organization.—The division is composed of division headquarters and staff, and two groups as follows:

1st Group:

1 Brigade headquarters
2 Regiments of cavalry

1 Regiment of Bersaglieri (cyclists)
1 Artillery group 75/27-mm, horse.

2d Group:

1 Battalion Bersaglieri, motorized
1 Bersaglieri, motorcycle machine-gun company
1 Group of 30 light fast tanks
1 Artillery regiment of two groups: one 75/27-mm and the other 105/28-mm, both motorized
1 Chemical platoon
Service detachments.

In 1925, the bersaglieri regiments consisted of two cyclist battalions. Each cavalry division had one of these regiments.

In 1936, the bersaglieri were reorganized, so that each regiment now consists of the following:

A headquarters company
3 battalions: the 1st battalion, motorized; the 2d battalion, motorized machine guns, and the 3d battalion, cyclist.

The 1st battalion consists of three rifle companies, in three platoons of three combat groups, each group armed with two light automatic arms, and a machine-gun company of three platoons (4 machine guns each) and one mortar platoon of three groups of three pieces each. The whole battalion is transported in trucks.

The 2d battalion is composed of a motorized machine-gun company of four platoons of four squads each (1 noncommissioned officer, 4 men and one light automatic rifle), and one company of fast tanks, of three platoons of four tanks, each with two machine guns.

The 3d battalion (cyclist) is composed of three rifle companies, of three platoons of three groups. Each group is armed with two light machine guns. The 4th company is a machine-gun company equipped with side cars.

(*Militär-Wochenblatt*, 21 May; *Bulletin Belge des Sciences Militaires*, October 1937)

Airplanes:

The Fiat Aeronautical Company has just completed the construction of a powerful bombing plane, the VR-20, for service with the Italian Air Force. This plane is equipped with two 1,000-horsepower motors, and has a speed of 273 miles per hour.

Its armament consists of six machine guns. The plane is capable of carrying a load of 3,500 kilograms of bombs. Radius of action: 1,900 miles. It can climb to 21,000 feet in 21 minutes; its ceiling, fully loaded, is 30,000 feet and 36,000 feet, without load.

(*La France Militaire*, 2 March 1937)

Italian Shock Tank:

An 8-12 ton tank, powered by a Diesel motor, is armed with a 37-mm gun, mounted in the bow and two machine guns in the turret. Fuel capacity is 120 kilometers on roads. Its maximum speed is 30 to 32 miles per hour on roads and 12 miles per hour cross-country. Its manning personnel consists of three men. Each tank regiment will have one battalion of this type of tanks.

(*Krasnaya Zvezda*; *Militär-Wochenblatt*, 12 March 1937)

Regimental Artillery:

According to German military press reports, since 1936, each infantry regiment has been assigned a battery of four 65-mm mountain guns as regimental artillery. Eighty shells accompany each gun; in addition, 120 shells per gun are carried in the combat train and 100 rounds in the division park.

(*Krasnaya Zvesda*, 24 July 1937)

Navy:

The *Littorio*, Italy's second 35,000-ton ship, a sister of the *Vittorio Veneto* (launched at Trieste on 25 July), was launched on 22 August 1937. The Italian Navy now possesses six battleships, four of which, the *Cavour*, the *Cesare*, the *Doria* and the *Duilio* have been modernized.

(*Illustrated London News*, 28 Aguust 1937)

The decree of 22 December 1936 prescribes the maximum age limit for various ranks as follows:

Supreme Commander of the Armies	64 years
Corps Commander	63 years
Major General	60 years
Brigadier General	58 years
Colonel	55 years
Lieutenant Colonel	52 years

Major	50 years
Captain	46 years

Officers, upon reaching the above ages, are placed on the retired list, but receive full pay for four years. The examination required for promotion to the rank of colonel has been abolished, but the one for promotion to major and captain has been retained.

(*Revue Militaire Générale*, September 1937)

Airplanes:

The Savoia-Marchette, considered by the Italians as the fastest bomber in Europe, has a cruising radius of 625 miles and can make nearly 300 miles an hour with a load of two tons of bombs.

(*Associated Press Dispatch*, London, 5 October 1937)

New Machine Gun:

The Fiat Model 1914 machine gun, used throughout the World War, has been replaced by the Fiat Model 1935. This new type of gun is air-cooled, has a somewhat larger bore, flatter trajectory, greater power of penetration and precision, a range of about 6,000 yards and a rate of fire of about 600 shots per minute.

The 20—1935 model gun turned out by the Breda Works, is really a super machine gun, expected to be particularly useful against armored airplanes at 1,000 or 2,000 yards elevation. It fires armor-piercing, explosive and tracer shells, with special regard to the destruction of aircraft.*

(*Canadian Defence Quarterly*, July 1937)

Navy:

According to the *United Services Review*, 2 September 1937, the *Littorio* and the *Vittorio Veneto* will carry nine 15-inch guns, twelve 6-inch guns and twelve 3.5-inch antiaircraft guns, speed of 30 knots per hour. Both battleships were to have been ready for service by October 1938, but due to the Abyssinian War their completion will probably be delayed about two years.

*NOTE: The Italian 20-mm gun is reported to have a vertical range of 3,800 yards and a horizontal range of 5,300 yards.—*Editor*

JAPAN

The German publication, *Wehrtechnische Monatshefte*, publishes in its June 1937 issue, an interesting article on the reorganization of the Japanese artillery by Colonel M. Blümner, German Army, retired.

The program inaugurated in 1934, recently completed, has raised the military strength of Japan from 17 to 25 divisions. There has been a corresponding increase in artillery units. It is estimated that the army has at present no less than 1,700 guns, of which 400 are heavy. In addition to this artillery, Japan has on hand a large number of old guns which the Regular Army had discarded in the process of reorganization. Similarly, the national munitions industry has been greatly developed to assure a speedy production of new guns in the event of war. The 75-mm field gun Model 1905, formerly manufactured by Krupp, is now produced by the Japanese munitions plants at Nagoya and Osaka. Its original maximum range of 9,000 yards has been increased to 13,000 yards.

The Japanese army has no corps organization. The infantry division is the highest unit and its fire-power has been materially augmented by increasing the number of accompanying guns, by the organic assignment of a battery of 4-75-mm (Krupp), horse-drawn, to each infantry regiment, as well as by the adoption of modern guns to the field artillery regiments.

The field artillery regiment (light) of the infantry division now consists of three gun battalions and one howitzer battalion. Each battalion consists of three batteries, thus making an effective strength of 36 guns and 12 howitzers for the regiment. According to the Russian *Artilleriski Zhurnal*, the howitzer battalion is to be distributed among three gun battalions.

The cavalry consists of four independent cavalry brigades to each of which is attached a battalion of horse artillery equipped with the 75-mm Krupp.

The battalion, as a rule, includes two mortars, two or more antitank guns and several infantry howitzers. In addition, each company has six small grenade projectors, with a range of 550 yards.

Antiaircraft Artillery:

The Regular Army maintains four regiments of antiaircraft artillery, besides a number of independent batteries assigned to the regiments and independent battalions of the heavy artillery

and to the cavalry brigades. In addition, there are antiaircraft units for the defense of large cities, industrial centers and seaports. No less than 70 antiaircraft guns, including searchlights and sound locators, were acquired by popular subscription during the last four years.

An antiaircraft battery consists of four guns, or of four platoons of two guns each. The so-called heavy antiaircraft artillery units are armed with the modern 75-mm and 105-mm guns; the light units with guns up to 40-mm.

Motorization:

Due to the shortage of horses in Japan, motorization of the artillery is greatly stressed. The heavy artillery and at least one-fourth of the heavy field artillery (105-mm) is already motorized. Most of the division artillery, for the present at least, remains horse-drawn. The artillery tractors are primarily of American manufacture.

The standard of artillery training is high. Emphasis is placed on the cooperation between the artillery and infantry. Centralized fire control constitutes one of the basic principles for the employment of artillery. Japanese artillery has made vast strides in armament and organization.

The Japanese tank doctrine, as outlined in *Training Regulations for a Light Tank Battalion, 1935*, prescribes that the new tanks shall not only be employed for close support of the infantry, but to a limited degree, on independent actions. In the attack, each infantry division will have at its disposal from one company to one battalion of tanks, which practically becomes the close support artillery.

Armored Cars:

The armored car, model 2592: The chassis is mounted on six wheels; weight 5.85 tons; 75 horsepower motor; speed 80 kilometers per hour; armament, two machine guns, one of them in the turret with provision made for a third automatic weapon; crew, four to five men; armor, 8-mm to 11-mm; length, 5 meters; width, 1.85 meters; height, 2.65 meters.

(*Neue Kraftfahrer*, 13 May 1937)

Aviation:

The seacoast bombing plane, all metal, is equipped with two 700 horsepower motors, water-cooled; crew of five to six

men; speed, over 250 kilometers per hour; capable of carrying 2,000-pound bombs; fuel capacity, 8 to 10 hours in the air.

(*La France Militaire*, 16 May 1937)

When hostilities broke out at Shanghai, the Japanese Army was reputed to have 1,000 planes and the Japanese Navy 400. They have a large air base in Japan proper, one in Manchukuo and one in Korea.

(*Foreign Affairs*, October 1937)

The Japanese pursuit plane, Nakadzima I, is a low-wing monoplane, a copy of the American Boeing pursuit.

The Nakadzima-AT is also a low-wing monoplane, a copy of the Douglas DC-2.

(*Bulletin Belge des Sciences Militaires*, April 1937)

Synthetic Fuel:

According to press reports, extended experiments conducted at the Naval Fuel Depot at Tokiyama for the production of synthetic fuel have been successful and the Navy talks of installing a plant which will produce 20,000 tons of aviation fuel annually.

(*Royal Air Force Quarterly*, October 1937)

Modernization of Japanese Battleships:

The modernization of the four 31,000-ton battleships *Fuso*, *Yamashiro*, *Ise* and *Hyerga* was completed in November 1936. Repairs on the two 34,000-ton battleships *Nagato* and *Mutsu* have also been completed. The oil-burning installation has been reenforced, the fire control installation has been modernized and blisters have been installed. These two ships will have a triple protection against torpedoes.

(*U.S. Naval Institute Proceedings*, August 1937)

MEXICO

A decree signed by President Cardenas in March 1937, authorizes the Secretary of War and Navy to confer degrees on military personnel who has attained the required proficiency at any of the government military schools in the following branches: General medicine, veterinary medicine, engineers

and any other professions as may be established at a later date. The diplomas will be issued by the Ministry of War, signed by the President of the Republic and will have the same face value and give the holder the same rights and prerogatives enjoyed by those possessing degrees conferred by the National University of Mexico.

Another decree of recent date, prescribes that officers graduating from general or service schools must, immediately after graduation, spend two years of actual duty with troops before being detailed to general staff duty.

(*Revista del Ejercito*)

NETHERLANDS

The Netherlands Army comprises the forces stationed in the home country and those stationed overseas, which are independent of the former.

The kingdom is divided into four military areas, corresponding to four divisions, The Hague, Arnhem, Breda and Amersfoost. These divisions are organized into a field army, which had an average strength in 1936 of 568 officers and 15,769 men.

The total number of airplanes stationed in the home country in 1936 was 266.

The Netherlands infantry is armed with the Mannlicher magazine rifle, model 95. Cavalry and engineers carry the Mannlicher carbine. The field artillery, including the horse batteries, is armed with a shielded Q.F. Krupp gun of 75-mm.

Navy:

The Navy is maintained for a double purpose—viz., the protection of the Netherlands waters and coast, and the defense of the East Indian possessions. The majority of the vessels are intended mainly for the defense of the Netherlands Indies.

(*Statesman's Year-Book, 1937*)

NICARAGUA

Mining:

The Tonopah Mining Company of Nevada has made a contract with the Government to increase its mining operations

on the East coast of Nicaragua, near Siuna in the District of Prinza Polca, Department of Zelaya.

(*New York Times*, 25 October)

NORWAY

The armed forces of Norway consist of the land army, the military air force and the navy, all under the Department of Defense.

The land forces are divided into the regular army, the territorial army and the Landstorm.

The Army consists of six divisions of varying strength and the following non-divisional units: 1 engineer regiment, 1 anti-aircraft regiment and 1 air battalion. According to the 1933 organization there were 72 airplanes available.

The Navy has 4 battleships (coast defense), of from 3,850 to 4,100 tons; 3 destroyers, 25 torpedo boats and 9 submarines, a total tonnage of 23,212.

According to the 1933 organization, the number of airplanes was 64. The actual number is at present less than the figure given.

(*Armament Year-Book, 1936*)

PANAMA

The Republic of Panama has no army or navy. The National Police Force numbers 91 officers and 987 men.

(*Statesman's Year-Book, 1937*)

PARAGUAY

Colonel Rafael Franco, hero of the Chaco War, who was president of the Republic, was exiled to Argentine last August, being succeeded by Provisional President Felix Paiva. A counter-revolutionary movement, chiefly supported by Chaco war veterans and radical elements which aimed at the restoration of Colonel Franco, was unsuccessful and Franco was compelled to fly back to Buenos Aires immediately after his arrival at Asuncion.

(*Press Reports*)

Navy:

The Paraguayan Navy comprises a pair of Italian built gunboats, the *Humaita* and *Paraguay*, and three armed steamers of which two were originally Dutch tugs.

(*Naval Institute Proceedings*, November 1937)

PERU

Aviation:

The air corps has been formed under the Minister of the Navy and Aviation and commanded by an Inspector General. Squadrons of pursuit, reconnaissance and bombardment planes have been organized. The principal air center is at Las Palmas, 10 miles from Lima, the capital of Peru, on the Pacific, where the military aviation school is located. Both French and American planes are found: the French "Potez-39," "Nieuport 122," "Morane-Paulnier," and the American "Curtis-Hawk" and "Curtis-Falcon." Most of these planes can be converted into hydroplanes by substituting pontons for the landing gear.

Bulletin Belge des Sciences Militaires, November 1936)

POLAND

The Polish army numbers approximately 340,000 men. It is composed of 30 infantry divisions (including 2 divisions of mountain troops), 1 division and 12 independent cavalry brigades.

Each infantry division comprises a division headquarters and staff, three regiments of infantry, one regiment of light artillery and one telegraph company.

The cavalry division comprises the division headquarters and staff, three brigades, consisting of two regiments of cavalry each and two groups of horse artillery, one pioneer squadron and one telegraph platoon.

An independent cavalry brigade usually comprises the brigade headquarters and staff, two-four regiments of cavalry, one group of horse artillery, one pioneer squadron and one telegraph platoon.

The Air Force consists of about 700 airplanes.

Military service is compulsory. There is, in addition, an auxiliary compulsory service which applies to all male citizens between the ages of 17 and 60 not performing active military service and not belonging to the reserve or territorial forces.

(*Armaments Year-Book, 1936*)

PORTUGAL

The armed forces of Portugal consist of the *Home Army* which comprises the land army, the air force and the navy, and the *Colonial Army*, which comprises the whole of the military forces organized in each colony to act as garrison and defense force.

The Home Army, intended for garrison purposes and the defense of the mainland and of the adjacent islands (Madeira and Azores), comprises the Regular army and the army reserve. There are no permanently organized formations in peace time higher than the brigade in the cavalry, the regiment in the other arms, groups in the Air Force and the company in the Services.

Military service is compulsory for every citizen from the ages of 17 to 45. The total peace strength in June 1936 was 3,146 officers and 24,000 men, organized in 21 infantry regiments, 2 cavalry brigades, 9 regiments of artillery with auxiliary services. The overseas garrisons comprise 3,000 officers and 8,400 men.

(*Armaments Year-Book, 1936; Statesman's Year-Book, 1937*)

RUMANIA

The armed forces of Rumania include the land army, the air force and the navy, all under the Ministry of National Defense. The King is the head of the armed forces of the Crown; in time of war, he may delegate the supreme command to a general officer.

The composition of the army is as follows: A total of 7 army corps, consisting of from 2 to 4 divisions of infantry or light infantry each (22 in all), besides non-divisional services and formations; 1 corps of light infantry, of 2 divisions; 1 guard division; three cavalry divisions and one independent cavalry division.

The Air Force comes within the province of an Under-Secretariat of State for the Air, attached to the Ministry of National Defense. In 1931, the Army had 773 airplanes and the Navy 26.

Military service is compulsory, between the ages of 21 and 50. The duration of service with the colors is two years in the army and three years in the air force.

(*Armament Year-Book, 1936*)

RUSSIA

The area of the Soviet Union is estimated to be 8,238,340 square miles, including 6,530,852 square miles of Asiatic Soviet Union. The population is 161,006,200, of which 122,114,545 are in Europe. With an army of 1,500,000, Russia tops all other nations in standing army strength and in military manpower; its navy, with a total tonnage of 200,000 is far behind that of the leading World Powers. According to press reports, Russia is motorizing and mechanizing her army, and in order to accomplish this, she is increasing the number of factories for construction of airplanes and motors as fast as conditions permit.

Motorization and Mechanization:

Russia has five divisions and nine independent brigades completely motorized. The present tendency is to provide each infantry division with a motorized reconnaissance group; all the cavalry divisions have already been provided with three mechanized squadrons (one of light tanks, one of tankettes, and one of armored cars). Finally, it is planned to motorize the 25 frontier guard detachments of the western border, grouping them into seven motorized divisions, each division having either three or four detachments.

There are 28 factories for construction of airplanes, 14 for motors and 32 for accessories of all kinds, employing a total number of 220,000 men. The tendency is towards the construction of heavy and super-heavy bombers, also capable of being utilized for transportation of personnel, and towards pursuit aviation. It is calculated that Russia has about 3,500 planes near the western frontier and approximately 1,200 in the Far East.

Efforts are also being made to increase the production of vehicles to 630,000 in 1937, with a possible future increase to 785,000 of all kinds. The exploitation of petroleum will also be increased. Rubber, so essential to their needs, will be supplemented by synthetic materials of which 25,000 tons were produced in 1935.

The Red Army at present has from 3,500 to 4,000 modern tanks, most of them "Christie," manufactured in Russia.

On 1 September 1935, the Red Army was reported to have the following units:

2 Motorized divisions
6 Armored-car regiments (one in the Far East)
16 Independent battalions (six in Far East)
9 Transport battalions
18 Groups of armored cars (six in Far East)
4 Groups of armored trains.

(*Neue Kraftfahrer Zeitung*, 25 February 1937; *Revue d'Artillerie*, February 1937)

Amphibian Tanks:

The Soviet Army has organized amphibious armored-car units of six-wheel Ford vehicles. These vehicles weigh 10 tons, 85 horsepower motor, speed on land 40 miles per hour, speed in water, 6 to 7½ miles per hour; crew, 4 men; armament, one 37-mm gun, one .30 caliber machine gun and an additional light machine gun.

(U.R.S.S.: "L'Auto blindée amphibie Ford," *Bulletin Belge des Sciences Militaires*, November 1936)

Aviation:

According to the British publication, *Aeroplane*, the principal efforts of U.S.S.R. aviation has been up to now, directed towards bombardment. Following the principles adopted from the Germans, the construction is thick wing, all-metal in all types, even in the new fast combat and pursuit planes which are now being produced.

Many of the bombers now in the service were built in 1931-1932 under German license. There are at least 800 of these. A newer development of this type has a radius of action of 1,800 kilometers, speed 215 kilometers an hour, useful bomb load, 2,000 kilograms; total weight of the plane: 18,000 kilograms.

A faster and more efficient bomber, now being made in quantity, has four 1,200 horsepower motors and a fifth Hispano motor, which serves as supercharger.

A lighter bomber with two Wright Cyclone motors, carries a crew of four, a load of 750 kilograms of bombs and can fly 1,600 miles without refuelling. There are more than 100 of these in the service.

Navy:

The Red Navy operates four 1911 battleships, seven cruisers, 35 destroyers, between 30 and 35 submarines and 60 gunboats. The total tonnage is 200,000.

Russia, while strong on land and in the air, is weak on the water. Most Russian ships are of World War or pre-war origin, and are concentrated in five seas: Baltic, Caspian, Black, White and Pacific. Many of her best vessels are in the Baltic, facing Germany, or in the Far East, where Japan looms up.

(*Literary Digest*, 2 October 1937)

SALVADOR

Salvador, with an estimated population of 1,500,000 is the smallest and most densely populated of the Central American states. Its permanent armed force in 1935 was 100 officers and 1,755 men, organized in 5 divisions of 15 infantry, 2 cavalry and 3 artillery regiments.

(*Statesman's Year-Book, 1937*)

SIAM

On 12 April 1937, the former Royal Aeronautical Service was reorganized into a separate fighting force under the designation of Royal Air Force, and, like the Army and the Navy, will be under the jurisdiction of the Ministry of Defense.

(*Royal Air Force Quarterly*, October 1937)

SPAIN

The most recent press reports put the total number of men under General Franco at 375,000, while Valencia has probably

450,000. In the Rebel Army there are from 60,000 to 80,000 "Volunteers," while the Leftists have, it is estimated, about 15,000. There are about 3,000 Germans with the Rebels and about 3,000 Russians with the Loyalists, but neither of these forces are used in the front lines. They are in charge of guns, tanks and airplanes and are used at base camps for repair work.

(*New York Times*, 24 October)

Italy has officially announced that there are 40,000 Italian volunteers in Spain, although it is claimed in France and England that the actual number is about 80,000. The Italian volunteers, according to reports are organized into five divisions: the Black Arrow, Black Flame, 20th of March, Littorio and Black Band. The semi-official commander of these forces is said to be General Bastico of the Italian Army General Staff.

According to information obtained from foreign periodicals and press reports the following material is being used in the Civil War:

TANKS:

Nationalists:

German, light, weight 6 tons.
Italian, Fiat-Ansaldo, 2-3 tons.

Loyalists:

Russian T-26, weight 8½ tons.

Number received (estimated):

Nationalists: 400-500 from Italy and Germany.

Loyalists: About 200 from Russia.

Comparative efficiency: Russian, superior to both Italian and German; Italian, least efficient.

AIRPLANES:

Nationalists:

The "Junker 52," Heinkel (German)
Savoia, Caproni, Fiat (Italian).

Loyalists: The "Kationska" (Russian, 198 m.p.h.).

Comparative efficiency: Russian pilots extremely good, on the whole superior to both Germans

and Italians. In general, Italian machines superior to Germans.

ANTITANK GUNS:

Nationalists: German 22-mm, also the 37-mm and the 47-mm. On the whole, very efficient.

Loyalists: Russian, not much known about them.

ANTIAIRCRAFT ARTILLERY:

Nationalist: The German 37-mm; also the German 88-mm, with all the latest devices, extremely efficient.

Medical Service:

An investigation by the League of Nations discloses the fact that a complete health service exists in each of the 50 provinces, consisting of hospitals, institutions of hygiene, dispensaries, statistical departments, institutions for the aged, insane, and abandoned children. When hostilities started, the Spanish Army Medical Corps consisted of 600 medical officers, 40 of whom were army doctors in the regular service, 60 retired doctors, all of whom were recalled, and in addition, 500 civilian doctors were attached to the troops. The Ministry of War considered this number adequate. One medical officer and one "practicante" (male nurse) were attached to each battalion, and two medical officers to each company. Dressing stations were established as near the firing line as possible. Severely wounded and sick are sent to the "brigade medical post," and advanced field ambulances where urgent surgical operations are performed. Each brigade medical post has a chief medical officer, eight orderlies and sixteen stretcher bearers. Further to the rear are the "medical headquarters" from which disposition of the sick and wounded is made. For wounded soldiers seventy civilian hospitals are reserved, twenty of which are directly under the Ministry of War, the others under provincial authorities, Workers' Committees, or the International Red Cross. The total number of beds for wounded is 25,000, which appears to be adequate. Fortunately, no epidemics have occurred in Spain since the outbreak of hostilities.

(*Military Surgeon*, October 1937)

SWEDEN

Air Force:

The air force of Sweden, although small, is exceedingly well trained and highly efficient. Primarily, it is destined for national defense, and its importance in this respect cannot be overestimated since Sweden has an unusually extensive coastline where simultaneous attacks from the sea and the air might have to be faced.

The air force also has been trained to cooperate with the civil authorities to detect attempts at smuggling, and in coastal rescue work, particularly during the long Swedish winter, from September to May, which presents grave perils to fishing and merchant vessels. Most of the machines are of British and German construction.

(*United Services Review*, 26 August 1937)

New Antiaircraft Gun:

On 30 May 1937 a demonstration was given of the new 40-mm antiaircraft gun, presumably a product of the Bofors factory. The effective range of this gun is about 9,000 feet, with a rate of fire of 120 rounds per minute. No other details were disclosed.

(*Royal Air Force Quarterly*, October 1937)

SWITZERLAND

Switzerland with a population of 4,066,400 has an army of half a million men. Everybody capable of carrying a rifle is enlisted in the military service.

Effective January 1938, the Swiss army will be reorganized and modernized. Funds have been appropriated for motorization and mechanization, as well as for defensive works at the frontiers. Protective measures have also been adopted for the defense of cities.

The divisions and the mountain brigades will be organized into three army corps. In addition to one artillery regiment of three groups, each division will have a heavy group motorized and one or more infantry cannon companies, motorized. The cavalry and the light troops have been completely reorganized.

(*Bulletin Belge des Sciences Militaires*, May 1937)

Automatic Guns:

The automatic gun "Oerlikon" is a heavy machine gun, mounted on pneumatic tires; it can be taken apart in broken terrain, the weight of the heaviest part being 35 kilograms; its range is about 5 kilometers and is a suitable gun for antiaircraft or antitank defense.

TURKEY

Turkey has a well-trained army, organized along German lines, consisting of approximately 125,000 men.

At present Turkey is having considerable difficulty with the Kurds, a rebellious tribe in inaccessible Eastern Turkey. Between March and June of this year, about 30,000 Turkish regulars with 30 bombers have been fighting some 5,000 tribesmen.

(*Literary Digest*, 16 October 1937)

Navy:

Turkey has announced a new naval program which completes the construction of one 10,000-ton and one 8,000-ton cruiser, 4 destroyers, and 4 submarines. According to this information, the cruisers are to be mine layers, and the submarines of 600 tons are to be constructed in Rotterdam. At Vegesack near Bremen, Turkey is having constructed torpedo motor boats, armed with 2 torpedo tubes apiece.

(*Naval Institute Proceedings*, November 1937)

URUGUAY

The Army of Uruguay consists of a small standing army and the National Guard. It is composed of two divisions comprising 19 line battalions, 4 rifle companies, 9 cavalry regiments, 3 field artillery regiments of 3 batteries each, a fortress artillery company and machine-gun company, 1 engineers' battalion, and 1 bearer company with a peace strength in 1936 of 800 officers and 6,700 other ranks, and a nominal war strength of 50,000.

The National Guard is a militia, service in which is compulsory in the event of war. Its total strength is nominally about 50,000 men.

There is also a police force, with an establishment of 5,000 and a force of mounted police ("Guardia Republicana") of 400.

The Fire Brigade, which also undertakes police duties, numbers 360.

The infantry of the active army is armed with the Mauser rifle; the field batteries have either Schneider or Krupp 75-mm. guns. The National Guard is mainly armed with the Remington rifle and old de Bange guns.

The Military Aviation School possessed, in 1936, 42 machines in active service.

Navy:

The fleet consists of the torpedo gunboat *Uruguay*, 1,150 tons; the surveying vessel *Miranda*, of 500 tons, built in Spain in 1930; 3 patrol vessels of 150 tons built in Italy in 1935; and a few craft of less importance.

(*Statesman's Year-Book, 1937*)

VENEZUELA

Armed Forces:

The Venezuelan army is organized into nine brigades, consisting in all of 43 infantry battalions. The artillery consists of 5 fortress and coast artillery groups, one regiment of field artillery and one machine-gun company. The cavalry consists of one regiment. The air force possesses 14 machines.

(*Armament Year-Book, 1936*)

The fact that the Venezuelan government has been able to repurchase the harbor of La Guaira from the British corporation which owned it for a sum of 1,100,000 £, without the least financial disturbance, is regarded as evidence of the increasing strength of the country. The payment was made in cash, but the reserve of gold still amounts to 81 million bolivars.

(*Naval Institute Proceedings*, November 1937)

YUGOSLAVIA

Army Organization:

The Yugoslavian army, in time of war, may comprise a total of 2,500,000 men. It has a peace strength of 148,000 men, including 9,000 frontier guards and 20,000 gendarmes, organized

into five armies. Each of these armies consists of three infantry divisions (each of four infantry regiments and two artillery regiments), an artillery regiment and service troops. In addition, there is the Guard Division (four infantry regiments, one cavalry brigade and one artillery regiment), two cavalry divisions and a mountain brigade. The entire force represents a total of 158 battalions, 40 squadrons, 209 batteries, 40 engineer and signal companies, 2 tank companies and one combat chemical unit. The peace-time armament consists of 6,000 light machine guns, 3,000 heavy machine guns, 832 light guns and 180 heavy guns and 120 tanks. The aviation consists of several brigades, which together with 10 regiments and 4 independent groups, comprise a total of 43 land plane squadrons and 9 of naval planes (830 airplanes altogether, of which 60 belong to the Navy).

(*Militär-Wochenblatt*, 14 May 1937)

THE SPANISH CIVIL WAR

In April 1931, the monarchical government, which had existed for over nine hundred years, was overthrown, the king was banished, and a Republic was proclaimed. For over five turbulent years Spain had been ruled, at various times, by Cabinets composed of republicans, socialists, communists and anarchists.

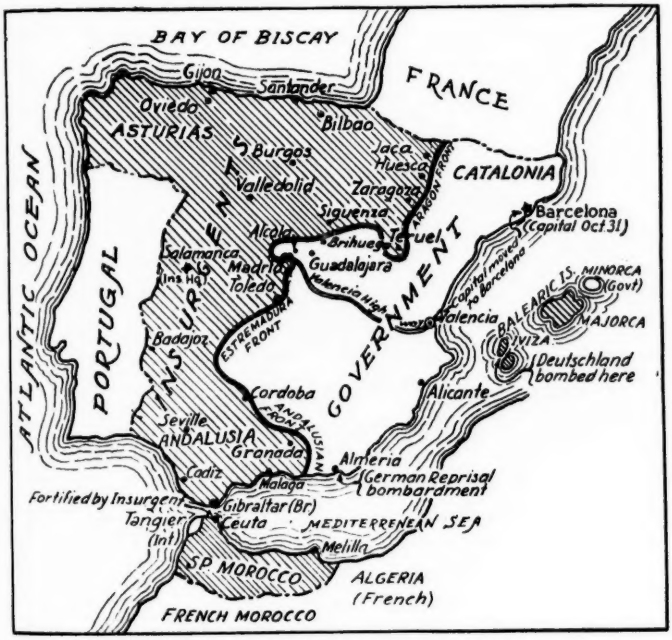
The Spanish Civil War began with spontaneous outbreaks in Morocco and in several Spanish cities on 18 July 1936. The Madrid Government, caught by surprise, was unable to quell these uprisings.

OUTBREAK OF THE CIVIL WAR, 18 July, 1936

MAP NO. 1

In the early stages of the war, it looked as if General Franco, with the bulk of the Regular Army behind him, was quickly overcoming opposition and inflicting a crushing defeat on the Government forces. In an incredible short time, he captured the most important arsenals of Western Spain, sweeping the disorganized Red masses to the gates of Madrid, Spain's beautiful capital. Russian aid reached the Government forces in time to check the insurgent offensive early in November 1936 and Franco is still hammering at the gates of the Spanish capital; however, the Insurgents have been victorious elsewhere. In the south, the important seaport of Malaga fell before General Llano's army in comparatively easy fashion on February 9th; in the North, Bilbao has been captured, while Santander fell before the three Italian divisions, Black Arrows, Black Flame and 20th of March, and a contingent of Moors and Royalist

troops. On 21 October 1937, Gijon, the last Leftist stronghold in the Bay of Biscay, surrendered. On 31 October, the Government Capitol was moved from Valencia to Barcelona and the Nationalists, today, control over two-thirds of Spain.



SITUATION AS OF Nov. 1, 1937
MAP NO. 2

The successful outcome of operations in the North, has enabled Franco to transfer thousands of men and, with them, the mass of artillery and tanks, and the large fleet of airplanes that the Insurgents had been using in the Asturian campaign for an offensive on the Aragon front. Madrid's trench network would necessitate a costly direct assault, while a successful offensive on the comparatively open Aragon front, which juts down to within forty to fifty miles of the Mediterranean and runs parallel to the cost for about sixty miles, would split Valencia from autonomous Catalonia and, very probably, cause the collapse of the Leftist Government. It is said that this offensive has been planned by Marshal Pietro Badoglio, Duke of Addis Ababa, successful commander of the Italian Forces in the

Abyssinian Campaign, who is considered today as Italy's keenest military mind. As a precaution, the Leftists moved the seat of Government from Valencia to Barcelona on 31 October 1937.

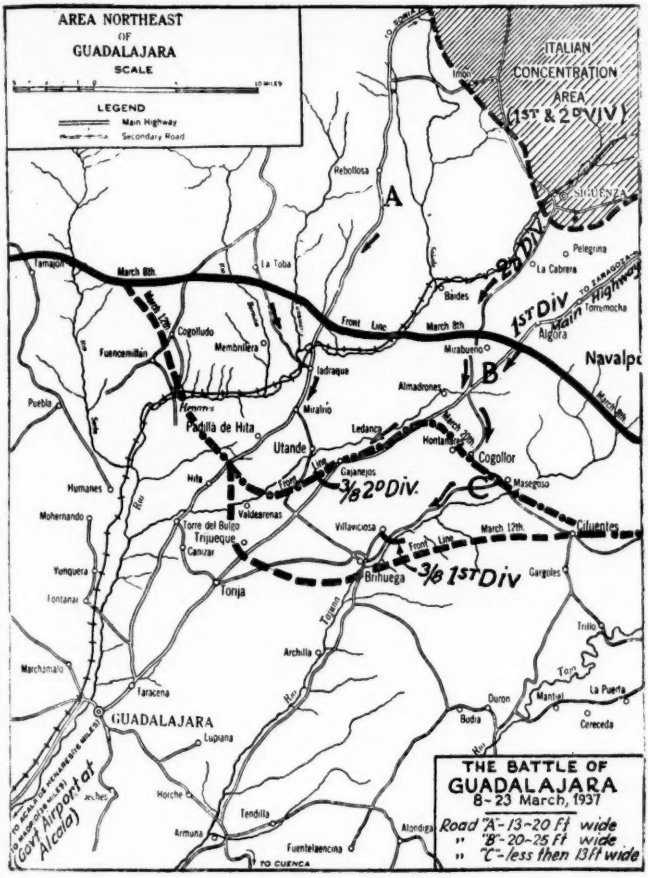
On 4 November, Prime Minister Neville Chamberlain told the House of Commons that the British Government and the Spanish Insurgents were negotiating for appointment of commercial agents. This favorable attitude is interpreted by British newspapers as an indication that the Government believes that General Franco will be in full control of the whole of Spain by the New Year. Rebel headquarters at Salamanca are most optimistic and many military observers are inclined to agree with Franco that, unless something unforeseen occurs, the "war is won."

A brief account of one of the main engagements of this war is given herein, because it contains fruitful lessons for the military student.

The Battle of Guadalajara

The battle of Guadalajara, which took place 8-23 March 1937, resulted in a resounding victory for the Madrid Government and was a severe blow to Italian prestige.

Having failed to capture Madrid by a frontal attack, Franco now decided to isolate the Spanish capital and thus force its evacuation or surrender. His plan was to launch a quick, hard blow by fast motorized units, with the main effort along the road: Siguenza—Guadalajara—Henares—Madrid and penetrate deep into Government territory, thus cutting off the Madrid—Valencia highway.



In order to carry out the above plan, the Insurgent force was concentrated in the vicinity of Siguenza and consisted of two motorized Italian divisions (each division consisting of two regiments of infantry of three battalions), one machine-gun battalion, some accompanying weapons, portee artillery and a battalion of fast, light Ansaldo tanks. This Italian force numbered about 20,000 men. It was a heterogeneous army, made up of unemployed, "volunteers" returning from Ethiopia and, according to some accounts, from Italians who had been employed in making the film "Scipio Africanus." The High Command and Staff were Italian regular army officers. However, this

force had won a comparatively easy victory at Malaga, on 9 February. It was transported north to its concentration area, utilizing about 2,000 trucks. The Government, apparently having made no strategic air reconnaissance, was completely unaware of this large hostile concentration and had no knowledge even of the start of the offensive.

The attack was launched early in the morning of the 8th by the 2d Division after a three-hour artillery preparation, and an advance of eight kilometers was made through the Government defense system on that day. By the 9th, the advance guard had reached all its objectives, without difficulties; but, unfortunately the main body, having been delayed for hours due to the destruction of a bridge, was unable to exploit the success. This delay gave the defenders time to bring up reinforcements and thus plug the breach. On the 11th, the 2d Division captured Trijueque and the 1st Division, advancing on its left via the Brihuega road, captured Brihuega.

At this time, nature came to the assistance of the Government forces. The rain which had not ceased for several days, transformed the surrounding terrain into a sea of mud and, as a result, long lines of trucks were immobilized and stranded on the roads.

On the 10th, the Government had concentrated a force of about 100 Russian planes in the airdrome at Alcala de Henares, thirty-six miles from Madrid, and during the afternoon of that day, Red planes made a reconnaissance of the objectives for the following day. On the 12th, the 2d Division stretched out for 20 kilometers along the Zarogoza Road, was surprised completely by Red aviation and was repeatedly bombed and machine gunned. More than 500 bombs (50 and 100 kgms) were dropped and over 200,000 rounds fired without any hostile air opposition. Due to the mud, Nationalist aviation could not take off from its temporary fields, while Government aviation had no difficulty flying from its permanent airport near Madrid. The air attack was further favored by low ceilings and caused a tremendous panic in the Italian columns. On the 13th, another air attack by 28 Red planes was launched, disorganizing the convoy that was trying to get reorganized on the only road available. Red reinforcements, supported by Vickers-Armstrong tanks, more maneuverable in the mud than the Fiat-Ansaldos, forced the Nationalists to retreat, Red infantry reoccupying Trijueque without fighting. No pursuit or air opera-

tions were undertaken on the 14th or 15th. Air attacks were renewed on the 16th and 18th, and Red infantry, now numbering from four to five brigades, one of which was the International Brigade, captured Brihuega. By the 19th, the Italians were in full retreat. On the 20th, Red aviation attacked the Insurgents north of Almadrones, Algora and Navalpotro. The Nationalists' retreat continued until 23 March, when they were finally able to stop the Red advance at a point a few kilometers from the line of depature of 8 March.

Comments:

As we have seen, the attack had advanced over 20 kilometers and the advance guards had progressed some distance beyond. It was only due to the element of *surprise* that the Nationalists were able to accomplish the above. They were prevented from further advance, however, due to rain, mud and the destruction of a bridge on the main route of advance.

It might have been a different story if General Franco had delayed his offensive until dry weather. However, the conclusion may be drawn that if motorized columns are held up before reaching their objective, they are in grave danger and, if not properly protected, they run great risks from hostile aviation.

The Red forces failed to exploit their success. It is reported that during the Red's counterattack, a group of tanks failed to capture a village occupied by Nationalists' machine gunners, enabling them to stop the pursuit at that particular point. This instance shows that victory by tanks is *incomplete*, if the conquered ground is not immediately occupied by infantry.

It seems hard to understand how such a heterogeneous force, difficult to control, was selected for this operation, and also how a convoy over 20 kilometers long was sent on a straight highway without protection from a hostile air attack. The Red air force was well piloted and well trained in attack against troops. Apparently, only the unbelievable foolhardiness of a command who persisted in following the tactics of the Ethiopian War, where there was no hostile air force to consider, can possibly account for these oversights.

The following lessons, among others, therefore, may be learned from this engagement:

1. Intelligent and continuous *reconnaissance* is vitally necessary for both ground and air operations.

2. The successful execution of the advance by motorized forces demands a well controlled, well trained, quick striking force, amply protected from hostile air and flank attacks.

3. In order to insure *surprise*, hostile air reconnaissance must be prevented from observing the concentration of the motorized or mechanized force.

4. Infantry must be ready to occupy immediately the ground conquered by mechanized units.

The Spanish Civil War in general, has furnished, according to Major General A.C. Temperley, British Army, the following lessons:

1. Ever-increasing power of the defense. Machine guns make a frontal attack mass murder, unless surprise can be achieved. Antitank guns will break down a tank attack if they are present in sufficient quantity and the element of surprise is lacking.

2. The antitank gun is destined to cause many changes in the employment of tanks.

3. Modern antiaircraft artillery is a greater threat to air power than ground defense had ever seen before. This is bound to have an effect upon aircraft tactics and design.

4. Advantage of having *Unity of Command*. The Nationalists have enjoyed this priceless advantage under General Franco from the beginning of the war.

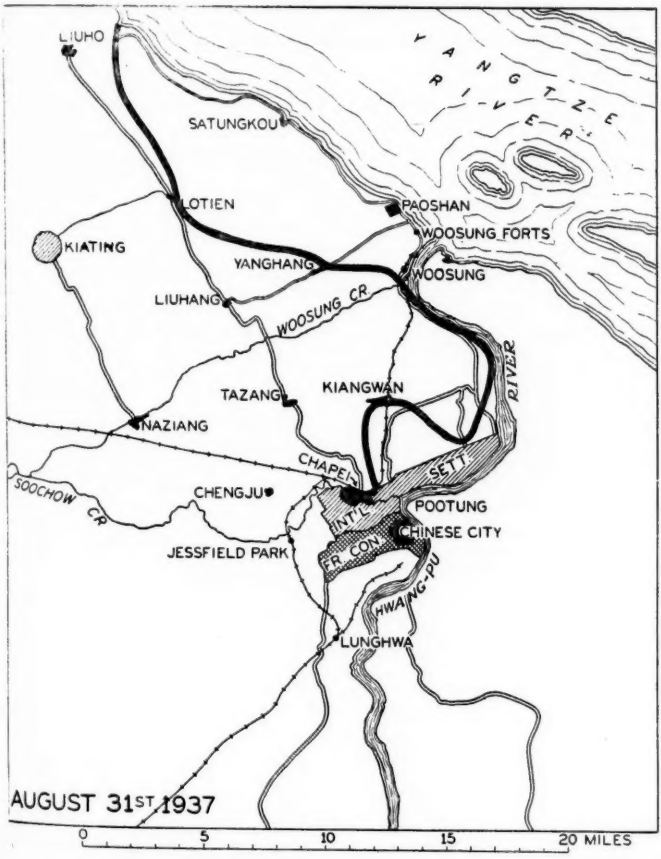
(*La Vie Militaire, Revue de l'Armee de l'Air*, July 1917; *Foreign Affairs*, October 1917 and other sources)

THE SINO-JAPANESE WAR

Japan started military operations in Manchuria in 1931, where a state of unrest existed and, in the following year, created the new state of Manchukuo, adding to it the Chinese province of Jehol in 1933. From that year onwards, a state of war has really existed in North China and the Japanese have steadily pushed forward towards the Great Wall, reaching Peiping in the summer of this year.

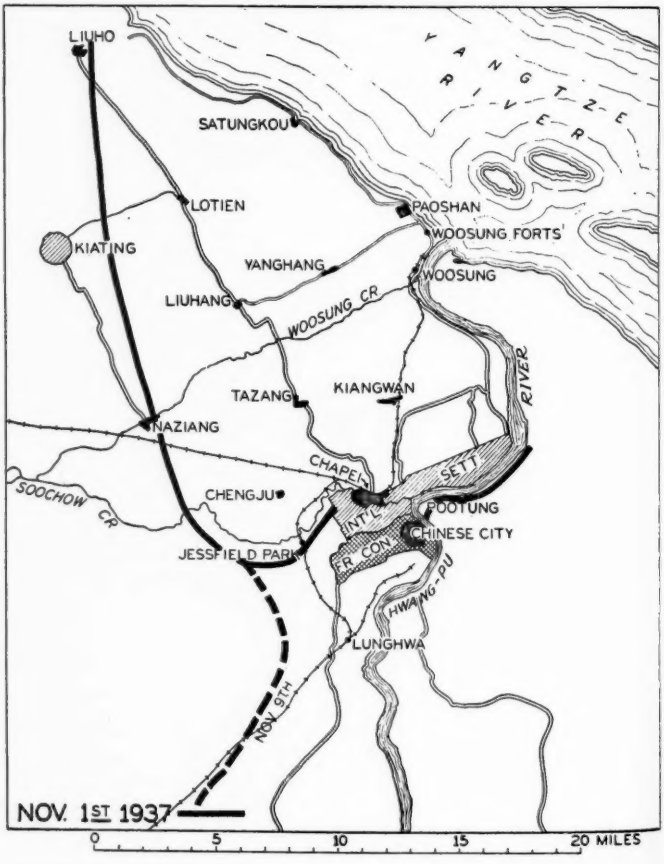
The present undeclared war between Japan and China, the greatest clash since the war of 1894-1895, had its beginning on 7 July 1937, when fighting broke out at the Marco Polo bridge, just west of Peiping. Shortly after, Japan started her campaign, which contemplated the following strategical objectives: (1) Paralyzation of Nanking, China's symbol of Unity;

(2) Control of Shanghai, Financial Heart of China, the sixth largest city in the world and the richest trade center of the Far East; (3) Extension of lines to the Yellow River; (4) Detachment of the five Northern Provinces, Suiyuan, Chahar, Shansi, Hopei and Shantung, with a total population of 80 millions and an area twice as large as that of Germany; (5) Cutting off China's Communications with Outer Mongolia.



In pursuance of the above strategical plan, Japan's main effort has been in the North, in order to conquer the five northern provinces, and westward through Inner Mongolia, which she hopes to use as a shield between Sovietized Outer Mongolia and China. Japan's secondary effort or "diversion" is being

made in the Shanghai area. This area has been the scene of bitter fighting since 12 August, and, for three months, the desperate resistance of the Chinese army, limited the Japanese advance to seven miles. However, this resistance gradually yielded and on 27 October the Chinese retreated to the south banks of the Soochow Creek, where they have dug a new defense line, with its right resting on the International Settlement, in a maze of trenches, in the fertile truck-gardening area which usually supplies Shanghai's food. The Japanese army, victorious at Tazang and Chapei, has been reinforced and is preparing for another offensive, the immediate objective of which is the Hungjao airdrome, southwest of Shanghai.



In the North, Japan's most important gains in three months of fighting have been, in chronological order as follows: Marco Polo Bridge, July 7; Capture of Tientsin, July 30; Peiping seized August 8; Nankow Pass, captured September 2; Paotingfu captured September 25; Yenmen Pass, October 1; Shihchiachuang, October 27.

Japanese men-of-war ring the Chinese coast in a blockade from Canton to Tientsin and Japanese planes based on the island of Formosa, on aircraft carriers, and on temporary fields established on Chinese soil, have raided Chinese cities, among them: Nanking, the capital of Chiang Kai-Shek's Nationalist Government; Canton, the great Southern port and scores of others in the coast and in the interior.

A glance at the map shows the reason why Russia is looking on from the North in grave concern, closely watching the Far Eastern war. Japanese armies are approaching Mongolia. The Trans-Siberian Railway, Russia's main life-line to the Pacific, runs for hundreds of miles close to the frontier of Manchukuo, which has been in Japanese possession since 1931. The Japanese have long regarded Siberia's Maritime Provinces, with the great base of Vladivostock at the southern tip, as a "dagger" pointing at the heart of the Japanese Empire. From this area, Russian bombing planes might spread death and destruction in Japanese cities, and Russian submarines might attempt to sever Japan's life-line with the Asiatic mainland across the Straight of Tshushima.

The Japanese Army has been trained and organized to fight in the Orient and with its knowledge of the terrain, climate and conditions, is probably second to none in a war in Eastern Asia. Japan is now an industrial country and is well able to supply her armies in the field, while, on the other hand, the Chinese Army consists of a large number of divisions of different standards of training, and is deficient in artillery, airplanes and tanks. China has, it is true, a tremendous man power, but she lacks modern weapons and munition factories to keep her forces well supplied at the front.

The military forces of the two nations compare as follows:

Japan:

Standing army: 17 divisions, comprising a total of 280,000 men, plus a native Manchukuoan army of 100,000 to 150,000 men, officered by Japanese. Trained reserves: 2,000,000. Combat planes, army and navy: 2,000. The navy is composed of 200 combatant ships of the five principal categories, plus smaller vessels, giving a total of 754,000 tons.

China:

Soldiers owing allegiance to Nanking and local war lords: about 160 divisions, totaling 1,700,000 men, plus Chinese Communist irregulars in the northward provinces, numbering from 100,000 to 150,000. Trained reserves: none. Combat planes: about 200. The navy consists of nine obsolete light cruisers and a number of sundry smaller vessels, totaling approximately 25,000 tons.

The Japanese armed forces are superior to China's assortment of armies. The economic and financial situation of Japan

demands a war of short duration and this could be accomplished if the Chinese armies accepted battle and suffered a decisive defeat at the hands of superior Japanese forces, or if Japan were successful in fomenting discord among the Chinese. China's fundamental plan of defense, as announced at Nanking on 9 November by Generalissimo Chian Kai-shek, is to conserve its own power while exhausting the enemy's. The fighting to date, however, has given evidence of increased Chinese unity, while indiscriminate bombing of cities have apparently strengthened the morale and increased popular support. How long can China stand against such heavy odds is a question that time alone can tell.

ABSTRACTS OF FOREIGN-LANGUAGE ARTICLES

This section contains abstracts of important articles from foreign military periodicals; the remaining articles for each magazine are listed in Catalog of Selected Periodical Articles.

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CONCRETE EXAMPLES OF ANTITANK DEFENSE (FRENCH)

["Cas concrets de défense contre les chars." By Captain Brouillard. *Revue d'Infanterie*, May, June 1937.]

Abstracted by Major R.G. Tindall, Infantry

If France went to war tomorrow, how would the French army defend itself against tanks with the means it actually has? Such is the question to which Captain Brouillard of the French army gives answers in the May and June issues of the *Revue d'Infanterie*.

In addition to the employment of obstacles, the only existing means of defense are the old 75-mm gun and the new 25-mm AT gun. Captain Brouillard considers the latter the principal active means of defense. The present French allotment seems to be 9 AT guns per infantry regiment and 3 for the division reconnaissance group, or a total of 30 to the infantry division.

Captain Brouillard estimates that the 25-mm AT gun is effective up to 1,000 yards against present tanks, and is capable of firing 15 shots a minute, and of fairly rapid displacement on the battlefield. However, he points out that the AT gun cannot

change position in the middle of an attack or be held in reserve and brought up at the last minute to face a tank attack. This procedure, tried out by the Germans, has proved illusory, he says.

The author considers four types of situations:

(1) The organization in one night of a position in the open (not behind a stream line) in order to face a hastily-mounted attack by an enemy whose principal strength is tanks.

(2) The possibility of an almost instantaneous defense against speedy armored vehicles.

(3) New aspects of the problem of security in the approach march.

(4) The classic case of the organization of a coupure or streamline for defense.

First Case

An interior division advancing to occupy a defensive position behind a river line finds itself forestalled by the enemy. Hostile mechanized elements are encountered on the near side of the river. These are followed by several enemy motorized divisions. The French high command decides to assume the defensive along the general line its forces have reached. During the afternoon the enemy gains contact with the division.

The High Command notifies the division that an enemy tank attack is possible the next morning. However, while the enemy has a mass of armored vehicles including many tanks, he has only the organic artillery of his divisions so that a strong infantry-artillery attack the next morning is out of the question. The only attack to be feared is one based principally on tanks. Consequently the dispositions adopted by the French division are especially designed to face an attack strong in tanks but lacking the mass of reinforcing artillery necessary for a grand-style attack.*

The author then examines the terrain on the division front. Villages, wooded hills surrounded with walls, and a chateau canalize the possible advance of tanks into three principal channels. These are level plateaus, where the grazing fire of machine guns would have full play and their occupation would be one solution against an attack on an infantry-artillery basis. But to face a tank attack, the division commander decides to avoid exposing his troops in such vulnerable positions. Instead, he

*It is to be understood that the original dispositions would be altered as the possibility of an infantry-artillery attack increased.

directed that the defense consist of centers of resistance organized for all-around defense in areas inaccessible to tanks, and that all antitank fires be concentrated in the three channels of approach.

The division holds a 10-kilometer front. It organized checkerboarded centers of resistance, occupying villages, wooded hills, chateaus, and even small woods, which against the artillery concentrations of 1918, were called "shell nests." Except for one company, not a soul is placed on the open hills by day. This company had to occupy one hill in order to maintain liaison between two regiments. All the engineers of the division were employed to construct artificial antitank defenses to protect this one company.

Gaps of 1,000 yards and even 1,500 yards between centers of resistance resulted but these gaps are swept by fire, particularly by the AT guns. These are echeloned in depth and usually sited for oblique fire. Captain Brouillard insists that tanks see better to the front than to one side. He admits that this is an astonishing psychological phenomenon but he says that after being astonished, one has to admit its truth.

At night small liaison detachments occupy the hills.*

One interesting feature of the deployment as visualized by Captain Brouillard is that the division does not retain any infantry reserve. He points out that against a tank attack, the infantry would be too slow to fill gaps and he sees no reason not to use all battalions to strengthen the defense.

The artillery's principal mission is to place fire in the avenues of tank approach. The normal barrage in front of the centers of resistance is not considered an urgent mission. The batteries are organized for close combat against tanks and in addition have a small infantry support.

Comparing this defense with the attack which might be made against it the next morning, the author says he is in doubt whether such an attack would succeed or not.†

However, he points out that this very doubt shows the great progress made in antitank defense in the last two years. There could be no doubt, he says, that before the French infantry received its new 25-mm AT guns, that such an attack would have crushed a French division.

*If the occupation of the position were to continue, the hills eventually would be occupied by stronger forces by day, after mines and antitank defenses had been installed.

†Captain Brouillard considers that each hostile division, reinforced by some 150 tanks, attack on a 4-kilometer front.

Thanks to the new AT guns, he concludes, the infantry has regained, at least in great part, the defensive capacity which the tanks had caused it to lose. The sudden, hasty attack, unsupported by any great mass of heavy weapons other than tanks, now is likely to be repulsed, whereas until recently, it would have carried everything before it.

Therefore, the attacker again is confronted by the heavy restrictions of the past, the necessity of an enormous superiority in artillery, in aviation and also in infantry.

Second Case

In the first case the situation was such that the French division disposed of a few hours in which to organize its defense. This margin was gained by the action of advance security elements which delayed the hostile mechanized force.

The second case is based on the same general situation, but assumes that the hostile mechanized forces rapidly drive in the division reconnaissance group and approach the advancing French division (an interior unit as before). The latter at once halts on a previously selected intermediate objective.

Captain Brouillard points out that tanks by themselves can wreck infantry in movement and cites the case of one tank platoon which struck the German 28th Division on 3 June 1918, as the latter moved to the attack. The tanks inflicted a loss of 19 officers and 514 men on the Germans and paralyzed the division for the day. Therefore, in the situation studied the French division must avoid surprise and fall on guard in order not to be destroyed. Only later can it destroy the enemy.

He discusses first the part of the Command and then the action of the executants. The Command's role in such a war of movement is more that of anticipation than of immediate reaction. The Command:

(1) Pushed reconnaissance security elements well forward and actively sought information.

(2) Arranged boundaries within the division so that each subordinate element had in its zone certain defiladed approaches and bits of antitank terrain.

(3) Fixed successive objectives in regions favorable for antitank defense.

(4) Having by active measures gained information of the enemy, stopped its regiments on an "economical" line, permitting them to fall on guard.

Captain Brouillard estimates that as a result, the regiments in this case would be warned about half an hour before an actual encounter with hostile armored vehicles. What can be done in half an hour, he asks. The answer is nothing, if subordinates' reflexes have not responded; a great deal if they have.

In their advance the subordinate units must have been careful to avoid denuded plateaus where tank action would be most effective. They must have followed covered approaches over antitank ground, even though this entailed additional effort for their men. The general situation demanded such procedure. Finally, when suddenly ordered to halt on an intermediate objective (presumably by signal), they must have understood at once that there was grave danger from hostile tanks, and without orders proceeded to hastily organize for antitank defense in the nearest antitank terrain.

The infantry would have its weapons ready to fire. Even though the fire plans would not be the best solutions, thought would have been given to all-around defense. The artillery likewise would have been able to go into position.

The result, while quite feeble with respect to a powerful, well-organized attack, nevertheless is held sufficient to withstand the advance elements of a hostile mechanized force. Small numbers of speedy armored vehicles may achieve great results in war of movement if they gain surprise. But if they fail to achieve surprise, such armored cars are an easy prey for the 25's.

Third Case

Captain Brouillard next discusses the situation that would arise if the division commander had not received information which had caused him to halt the division on an intermediate objective, suitable for antitank defense. In that case the leading elements of the division would encounter hostile armored vehicles while advancing.

From the general situation the advance units would know that the enemy had armored elements. Consequently, although the advance guards might have a highly offensive mission, their first preoccupation must be defensive. In case of an encounter they must:

(1) Not get destroyed by tanks and therefore, stop.

(2) Destroy the enemy.

(3) Only then, resume the advance.

Captain Brouillard argues that the third case therefore is rather similar to the second. It is more difficult because the terrain of the eventual meeting with the enemy cannot be selected and there will be less time in which to prepare to meet the enemy.

He concludes that the advance-guard battalion needs its own security organ, capable of protecting it and gaining information for it. Armored vehicles carrying a weapon capable of penetrating armor would be suitable. In the absence of such vehicles, infantry units must intensify reconnaissance by their organic motorcycle elements, and moreover, as they approach the enemy, must progress with a portion of their 25's always in position to fire. This means displacement by echelon of these antitank guns. Captain Brouillard admits that this procedure is difficult and inconvenient and that only part of the guns will be able to intervene. Nevertheless, he sees nothing better to do in the existing state of armament.

Fourth Case

Captain Brouillard changes his situation when he comes to consider the fourth case. A French army, covered by cavalry, advances toward an enemy, which is discovered to be superior in strength. The French High Command decides on 1 June to have the army in question go on the defensive temporarily while other forces are assembled for an enveloping maneuver. The division studied is a flank division (a cavalry division, however, has orders to cover the flank).

The enemy has a leading mechanized echelon which has driven back the army cavalry, and a second echelon of motorized divisions which have not yet been engaged.

The enemy is believed incapable of making a general attack on a wide front before 4 June but might endeavor to launch local attacks on 2 or 3 June, principally with tanks.

The division considered has a front of some 12 kilometers most of which is behind the Avre river, a stream some 8 yards wide and a yard and a half deep. There are seven bridges in the sector, which are ordered not to be destroyed, since the French contemplate ulterior offensive operations. The main line of resistance is placed in the valley which is some 600 yards wide.

The division uses six of its nine battalions in the front line, retaining the others in reserve. It also has two tank companies at its disposal.

The antitank defense of each regimental subsector must be conducted by the infantry colonels. Mines, or other obstacles are placed at probable points of passage by tanks.*

Therefore the zone of emplacements favorable for antitank defense must be strongly defended by other weapons. This zone in general is the vicinity of the military crest. The defense must carefully study and prepare fires of AT guns enfilading the valley. Likewise the observation system must function well and warn the colonel in time. Moreover, previous reconnaissance must have anticipated all possibilities, and firing positions and positions in readiness selected as a result of this reconnaissance.

The author points out that the colonel has nine AT guns with which to defend 4,000 yards. Obviously the guns must be able to concentrate fire upon the most dangerous localities. The colonel cannot scatter his defense equally along the entire front. The author regrets that the French do not have a division antitank unit so that the division commander can reinforce the most dangerous subsectors with AT guns. He likes the German solution of nine AT guns to each regiment and a divisional detachment of 27 guns in addition.

The 25-mm gun has created a new equilibrium between the defense and the armored assailant. A few years ago the attack of tanks, even without strong artillery support, would inevitably have broken a hastily-organized position, even though behind a water-line obstacle. Today this is no longer the case. Moreover, the 25-mm gun makes the employment of armored vehicles in small numbers quite a dubious proceeding. However, the 25-mm is still present in insufficient numbers, and moreover is not a complete solution to the problem.

Even with the 25's, the mere appearance on the horizon of hostile armored vehicles, even lightly armored and few in number, makes a division stop its advance and sit down in order not to be destroyed. It is necessary to have a few tanks ready to oppose the enemy at the proper moment. More and more, even in the execution of the simplest defensive missions, the infantry will need the support of tanks.

*The steep slopes near the river make it possible for the enemy to gain a narrow bridgehead by an infantry attack, rush tanks across and exploit the success rapidly.

Conclusions

Captain Brouillard, as a result of his studies, reaches certain conclusions as to the training of French infantry.

The infantryman must know how to organize the terrain almost instantaneously, principally with new or little-known obstacles, such as barricades, abatis, and triangular ditches beaten by fire. He must know how to dig in deeply at once.

He must be able to utilize the terrain, as is, so as to be protected on the march, at the halt, on the defensive at all times, with AT arms ready to go into action in all directions.

He must acquire the conviction that all is not lost when he no longer sees his neighbors, and that even if surrounded in a wood or village, he will be all right.

Only the strictest discipline will permit an entire unit to disappear and "play dead" at the first command. This is much harder in practice than on paper. Captain Brouillard also insists on careful selection of the personnel manning AT guns.

For officers, he insists that they prepare themselves intellectually for a war of speed and surprise. Small units must be ready for defense against mechanized enemies even in the absence of orders.

Since tanks cannot occupy terrain, he points out that when opposed by hostile tanks, nothing is really lost until the hostile accompanying infantry, ten to our one, is among us throwing hand grenades.

It is the clinging to the ground of islands of resistance which will check the inundation of tanks, and permit the High Command later to cause it to flow back.

NIGHT ACTION OF TANKS

[Original article by A. Ignatev. *Voina i Revolutsiya*]

Abstracted by Major W.E. Shipp, Cavalry

Night combat has been employed principally in order to effect surprise and to impair hostile morale.

During the World War tanks were employed very rarely in night actions as their technical development was still in the initial stage, but the selection of positions of departure and movements thereto were usually carried out at night. Part of

the attacks were delivered at dawn or in fog, and experience showed that such attacks were successful.

On 23 October 1917, at the battle of Malmaison, a dense fog covered the attack of five French tank companies against German artillery fire. In spite of the difficult situation—muddy terrain, wide trenches and a number of straggling tanks—the attack was successful and the Germans suffered heavy casualties. Particularly successful were the Schneider tanks which proved that tanks can also operate with a limited visibility.

On 28 June 1918, at Bucois, five British tanks supported by five infantry platoons were assigned the mission of attacking the Germans with the object of capturing prisoners or destroying German security units. The attack was initiated at 11:25 PM. The Germans opened vigorous trench mortar and machine-gun fire and the infantry remained behind, while the tanks advanced, delivered the attack and inflicted heavy casualties. In spite of the intense darkness none of the tanks lost their direction and all returned.

These examples show that not only reconnaissance in force but also operations of major forces are possible at night, but they require, however, careful preparation. The limited visibility of the tank personnel is no impediment. In general, it is nowadays hardly possible to conceive major operations otherwise than with limited visibility caused by smoke shells, smoke screens, the effect of rifle and machine-gun fire, the bursts of artillery projectiles and the dust raised by the movement of tanks. Mechanized units should be trained to operate under such conditions.

It is almost impossible to calculate the length of a day or night in a given season. For example, moonshine, starlight, a clear sky and good weather perceptibly favor visibility and night operations, while clouds and rain create an intense darkness. Darkness assists camouflage but impairs visibility, while wind and rain affect audibility. Bad weather creates difficult conditions for security units. Such nights materially facilitate surprise actions.

Visibility is also affected by natural fog and artificial smoke. It is difficult to foresee the appearance and disappearance of fogs but the laying down of smoke screens is entirely dependent on the will of the enemy.

Darkness, fog and smoke create special conditions with respect to visibility and camouflage and perceptibly influence the organization and delivery of night attacks.

Darkness, fog and smoke limit visibility and impede simultaneously movement, orientation and fire effect. Human vision is the same whether a man moves on foot, on horseback or in a combat vehicle; speed partly impairs vision for which reason the conditions are slightly worse with cavalry, motor-mechanized units, mechanized artillery and motor transport.

Vision inside a tank is the same as that outside. Recently designed optical instruments for night observation have successfully solved this difficult problem. Although it is difficult to recognize natural and artificial obstacles at night, this problem is solved by powerful friendly or hostile searchlights.

Men and horses move in darkness with care and their speed is slightly lower than by day. Tracklaying combat vehicles encounter no particular difficulties in darkness which affects only the driver. However, if the commander knows that there are no major obstacles in front, he can move rapidly in darkness. Minor obstacles (barbed wire, gardens, holes, ditches, etc.), which obstruct infantry and cavalry even by day, do not impede materially tracklaying vehicles. They are obstructed by major natural obstacles—such as marshes, ravines, extensive woods, wide ditches, etc.—which also obstruct the other arms. In general, during night movement, tracklaying vehicles operate under better conditions than other vehicles.

Combat vehicles have better possibilities of orientation than infantry and cavalry for the reason that the former are equipped with instruments (distance and direction indicators) which enable the vehicles to move on the battlefield at night in a similar manner to that of a vessel at sea. Moreover, combat vehicles can employ all orientation means which are used by the other arms for night movements. A searchlight not only illuminates the route but also directs the operations of combat vehicles (during changes of direction).

Rifle and machine-gun fires have the same insignificant effect on combat vehicles at night as by day. For this reason tank crews do not fear surprise rifle and machine-gun fires at night. Such fires are dangerous to infantry and cavalry, producing serious casualties and creating a panic, which may easily occur at night.

In general, combat vehicles are in no way threatened by troops irrespective of their number, but only by antitank weapons with which they are equipped. Antitank guns cannot, however, deliver aimed fire at ranges from 300 to 500 yards, except under very favorable conditions. The effect of artillery fire at night is insignificant and it is a well-known fact that infantry is helpless against night attacks of tanks.

All the above factors create favorable circumstances for night attacks of mechanical units, even if the visibility is limited. Large infantry units avoid night operations for fear of confusion and delivering fire on friendly troops. No such fear exists in mechanized units. Rifle and machine-gun fire is dangerous not to tanks but to troops and crews of antitank guns.

In daylight combat the greatest deficiency of tanks is that their fire is practically ineffective, particularly at high speeds. They are dependent upon artillery support. The effectiveness of tank fire begins with ranges from 500 yards downwards. During night combat all these considerations are non-existent.

It is seen that during night actions the effectiveness and organization of the defender's fire are perceptibly lessened in comparison with those of the attacking tanks. At night, tanks must be repelled by artillery fire; in this respect the position of the adversaries is equal. A great deal depends on the development of optical instruments for observing and directing fire in night combat.

During night operations the sensibility of man increases. A night attack should only be made under particularly favorable conditions (a light night, if the crews are familiar with the roads and area of attack, have accurate information about the enemy, etc.). Tank crews are not affected by a particular fear during night operations as their situation is better at night. In view of the limited visibility an enemy cannot open fire on each tank when it is stationary, and at night a tank can easily halt and, if necessary, withdraw from the battlefield with the assistance of other tanks.

It may be said that there are no psychological factors against night operations of mechanized units; on the contrary, there are many factors which are in their favor.

Tank missions for offensive night combat are as follows:

(a) Penetration of hostile fortified position with the ultimate object of enveloping or encircling units or of destroying important positions or dumps in the hostile rear.

(b) Destruction of individual units or the capture of centers of resistance with the object of establishing a favorable situation for further action at dawn.

The plan of action depends upon the prescribed mission and the situation, viz.:

(a) The strength, composition and location of the hostile troops.

(b) The strength and composition of friendly troops and the strength and composition of neighboring and cooperating units.

(c) The serviceability of combat vehicles and their preparedness for night action.

(d) The nature of the terrain, darkness and weather.

(e) The hour when preparations for night action are made and when the attack is to be delivered.

Particular attention should be paid to the nature of the terrain and to the removal of all obstacles. The plan of action should be extremely simple and each measure for removing obstacles must be studied carefully. The plan should make provision for the following:

(a) Careful reconnaissance of the terrain and hostile position; the location of any antitank weapons, obstacles and tanks.

(b) Reconnaissance of the location of mechanized units in the hostile position; the nature of antitank obstacles and of the methods of their removal, and of the most important routes of approach.

(c) Camouflage, deception of the enemy and maintenance of secrecy (by means of smoke screens and the camouflage of cover, sound and light).

(d) Approach march of mechanized units and occupation of the position of departure for tanks and cooperating units; location, approach and advance of the cooperating units; regulation of illumination services; preparation for moving in combat formation.

(e) Attack against the main line of resistance; opening, concentration and transfer of artillery fire; operations of searchlight units; removal of obstacles; maintenance of the direction of march; initiation of march; combat formations; liaison and observation.

(f) Action in the hostile rear and development of progress; action of artillery and searchlights; orientation marks; supply of ammunition and equipment.

It should be completely dark when positions of departure are reached and combat formations are taken up. In order to avoid confusion the most important directions are marked with white or conspicuous objects and tanks are furnished with identification marks.

After leaving the position of departure, tanks move in darkness until the attack is discovered by the enemy. This terminates the surprise effect and then searchlights are brought into play. During this period the following searchlight groups have to operate:

(1) Orientation group for orienting the combat units and for maintaining direction. For this purpose searchlights illuminate two or three characteristic objects in the depth of the hostile position or on the horizon; each battalion has its own orientation marks. The same group may transmit to the units the most important signals, viz.:

(a) Short interruptions may mean that the attack is carried on in the proper direction.

(b) Beam intersection on the sky and transfer of light to the right or left may mean that the combat group has to turn to the right or left.

(2) Front illumination group for illuminating the zone in front of the combat group. It is necessary to illuminate this zone continually, while the tanks approach outside the beam. Particular attention should be paid to searching for hostile antitank guns, artillery and antitank obstacles.

(3) The group for blinding hostile searchlights consists of particularly powerful searchlights. Usually one or two searchlights are assigned for combating hostile searchlights.

The command of searchlight groups is a particularly responsible task. Searchlights not only serve the units but also facilitate command.

Rockets are only employed for giving signals. During night combat units are not permitted to determine their own signal rockets. Rockets are passive means of illumination and illuminate both friendly and hostile units for which reason they are employed only in sectors of secondary importance.

Artillery action is rendered difficult at night but it is not altogether impossible. The artillery of the attacker may be brought into action if careful preparations have been made, i.e., reconnaissance and determination of ranges, and if the battlefield is sufficiently illuminated. The artillery should at-

tempt to neutralize the most important points of hostile antitank defense, delivering principally concentrated fire.

Infantry has two missions: to hold the terrain captured by the tanks and to assist the latter in removing antitank obstacles. On some occasions the infantry has to capture beforehand antitank obstacles either independently or in combined action with engineers or chemical warfare units. Usually infantry moves behind tanks.

The most important mission of engineers is to enable the tanks to pass antitank obstacles. After careful reconnaissance they carry out a number of technical works, viz., demolition of part of the obstacles by means of explosives and providing the tanks with auxiliary means for passing obstacles, such as fascines, bridges, etc.

The mission of chemical troops is to camouflage by means of smoke the movement of tanks to their position of departure and to divert the enemy's attention from the direction of the main effort; to compel the enemy, if weather conditions are favorable, to wear gas masks and thus to reduce his combat efficiency; and to neutralize the most important chemical obstacles.

The mission of the air force is to disclose by means of aerial photographs the situation of the enemy, viz., obstacles, antitank weapons, artillery, dumps and particularly the location of tanks.

Bombers should attack, before or during the tank attack, antitank weapons, tanks and dumps in rear of the hostile position.

Pursuit planes protect the attacking tanks against bombers, reconnaissance and pursuit planes.

Usually night marches of mechanized units take place without lights. In order to increase speed, blue searchlights are employed at long distances; moreover, the rear signal lamps of the tanks are illuminated.

Tank units arrive on the line of departure during complete darkness. The approach is carried out in groups along a wide front. Lines of departure are selected at such a distance that the enemy does not hear the noise of motors; there should be natural cover and the possibility of further movement in a straight line. The distance from the enemy varies between ½ and 1½ miles.

In order to avoid confusion, units are deployed for combat on the line of departure and advance in the same order. Move-

ment is facilitated by the determination of road spaces and intervals and is carried on in a straight line. Maneuvering takes place only under particularly favorable circumstances. An individual position is attacked only by the unit moving toward it. Machine-gun fire is principally employed. On suitable terrain an attack is delivered at the maximum speed and with the maximum effect but the tanks should never be scattered nor attack singly. There must be illuminated signals in order to avoid collisions. Disabled tanks extinguish their lights, continue action, if possible, and undertake repairs or signal their disability to the tank park.

The investigation of the problems of night combat shows that there are no insurmountable difficulties against the successful conduct of such combat. On the contrary, there are a number of factors that favor night action along with day action.

With respect to the visibility of day action it should be borne in mind that it has also to be carried on with limited visibility due to the employment of smoke by both sides.

The surprise effect, the considerable influence on morale, the reduction of the fire effect and the lessening of the enemy's vigilance are in favor of night combat.

The conditions of night combat do not permit the enemy to fire with impunity on stationary tanks. Preparations for night combat further the enterprise of the personnel and develop adaptability, determination and skill in operating under the complicated conditions of night combat.

ROLE AND IMPORTANCE OF ARTILLERY IN MODERN WARFARE

[From an article by General B. Grendal, in *Krasnaya Zvesda*, 21 July 1937. Translated by Staff Sergeant C. Berman, Historical Section, Army War College.]

Abstracted by Major E.M. Benitez, Coast Artillery Corps

The latest developments of powerful combat weapons, such as aviation, mechanization and gas, have not only influenced the employment of the artillery, but also have increased the importance of its role in modern warfare.

The tank, a powerful assault weapon, the importance of which was proven during the World War and verified in recent campaigns, has caused a tremendous increase in small caliber

antitank guns, and the adaptation of all other field artillery pieces for use against tanks.

Small caliber antitank artillery is being incorporated in all military units, particularly the infantry. In some of the leading armies of the world, the infantry division includes about 20 antitank guns per infantry regiment, making a total of about 90 guns for the infantry division, and there is still a tendency to further increase this type of artillery.

The large increase of small caliber antitank guns in infantry combat formations, has brought about an increase in this type of artillery, particularly in defensive positions that are vulnerable to attack by tanks, in a proportion of about 20 antitank guns per each kilometer of front. With such a density, a hostile force of 60 tanks—about two tank battalions—advancing on one kilometer of front, could be repelled.

It becomes, therefore, apparent that a massed tank attack without an artillery preparation to neutralize or partially destroy the antitank defense, would be doomed to failure. This preparation should be brief, in order to insure surprise. Furthermore, the tank attack should be accompanied by a rolling barrage or by artillery concentrations on antitank gun areas, in order to neutralize or destroy the enemy antitank defense system.

The dominant role in antiaircraft defense devolves upon the antiaircraft gun, the development of which has now reached a high degree of perfection.

In modern warfare, artillery applies the principles of (a) Surprise; (b) Mass; and (c) Depth.

(a) *Surprise.*—Strategical surprise is obtained by quick and concealed concentrations of large artillery forces at the decisive point of the main effort. Tactical surprise is obtained by fire without preliminary adjustment, night artillery preparation, by massed concentrations, by shifting of fire and by rapid maneuvers in the battlefield.

(b) *Mass.*—Artillery superiority in number and type of guns in the decisive strategical area; artillery density, that is to say, number of guns per kilometer of front on the front of the assault corps and divisions, making possible the delivery of brief artillery preparations and the concentration of fire on important targets.

(c) *Depth.*—Is obtained by utilizing the range of guns to fullest extent.

G.H.Q. artillery represents an essential factor in strategic operations. Marshal Foch made such skillful use of strategic reserves in 1918 that, according to General Ehret, all the 39 regiments of French artillery forming the G.H.Q. artillery, participated in each and every battle beginning with the operations of March 1918 to the cessationof hostilities on the Western Front.

ORGANIZATION OF ANTIAIRCRAFT DEFENSE OF TROOPS IN A MEETING ENGAGEMENT

[Abstracted from an article by Colonel Poplavsky, in *Vestnik Protivovozdushnoi Oborony*, January 1937.]

Abstracted by Major E.M. Benitez, Coast Artillery Corps

A meeting engagement, occurring as a result of troop columns clashing on the march, is characterized by lack of information and by rapid development of events.

In this sort of engagement, the adversary who possesses a strong air force will, as a rule, strive to ascertain the location of the enemy's main forces and launch an air attack before the advance guards have gained contact. This air attack may cause a delay in the deployment of the main body. An efficient antiaircraft defense must, therefore, insure the success of the movement of troops to the prescribed line of departure, which is so essential to success in a meeting engagement.

The mission of antiaircraft defense in the meeting engagement is to safeguard friendly troops from hostile aerial reconnaissance and to protect them from enemy attack, as follows:

(1) During the march and the approach march.
(2) During the meeting of the advance guards.
(3) During the deployment of the main forces.
(4) During combat and during the exploitation.

Antiaircraft defense must assure freedom of maneuver and protection for deployment. Once the battle has commenced, its primary mission will be to protect the reserves, motorized units and the artillery.

In a corps meeting engagement, antiaircraft artillery is usually employed to defend the most important columns while they are approaching the field of battle, during the march, especially along places vulnerable to aerial attack such as open

spaces, defiles and fords, for covering the deployment of the corps shock troops and to cover the concentration of tanks and artillery.

Antiaircraft artillery covers the march, moving its batteries forward at prescribed intervals. Antiaircraft batteries travel on the march, either along side roads, or with the main body. In the latter case, if the columns are marching on several roads, antiaircraft batteries travel in rear of the head detachments of the troop columns.

"Adapted" field artillery may be utilized for antiaircraft defense, while the troop columns are approaching the battlefield; however, once the battle is under way, such artillery should be shifted to fire upon ground targets.

Antiaircraft machine guns must be employed to fullest extent to protect the columns while they are approaching the field of battle, in order to prevent hostile air attacks, carrying out their missions from positions either along the entire route of the troop columns, or from selected positions covering fords, defiles or open tracts of country. Antiaircraft machine guns assigned to columns, are placed at distances not to exceed 800 to 1,100 yards between them. After the meeting engagement has commenced, the antiaircraft machine guns should be shifted so as to cover the shock troops, artillery positions and commanding points.

Local means of antiaircraft defense should be utilized for the purpose of assuring the concealed approach of the troop columns to the battlefield and to cover their deployment for battle. This will require:

(1) Breaking up of the troop columns into smaller columns.

(2) Utilization of available natural cover.

(3) Smoke screens while passing through defiles and through exposed stretches of terrain.

(4) Utilization of camouflage nets to cover artillery, tanks and vehicles.

Use must also be made of all possible forms of concealment, and the best of these forms is movement of troops after dark.

For antigas defense of the columns from air attacks, chemical reconnaissance detachments should be organized during the march, chemical observers spread out along the entire column, and a signal system of chemical alarms established. In anticipation of the employment of persistent gases by enemy

aviation, degassing sections should follow the advance guards and also the main bodies of the columns.

The rapid development of combat activities in a meeting engagement and the uncertainty of the situation, precludes the utilization of an elaborate system of antiaircraft defense and, consequently, maximum use must be made of those means which do not require elaborate or complicated preparations.

STRATEGIC RECONNAISSANCE

["Augklärung vor der Heeresfront." By v.Gonnermann. *Militär-Wochenblatt*, 23 July 1937.] (Translation by Sergeant F.W. Merten, D.E.M.L.)

Abstracted by Major E.M. Benitez, Coast Artillery Corps

SKETCH NO. 1

The military preparations made by various nations today lead us to believe that motorized reconnaissance forces will encounter the same difficulties that horse cavalry did at the outset of the World War, namely, that after a short advance they will be faced with a solid hostile front. At present there is a decided trend toward mobile warfare, and motorized and

mechanized units will be sent to gain contact with the enemy, to establish screens or to be used in pursuit; while executing any one of these missions, they will, nevertheless, continue securing intelligence.

The means of ground reconnaissance may be different from those used in the Great War, but the three basic elements of reconnaissance—speed, fighting power and means of communication—remain unchanged. Motorized reconnaissance may encounter situations in the future similar to those met by the cavalry in the World War. It seems, therefore, appropriate to study a reconnaissance operation of that war.

On 19 August 1914, von der Marwitz' cavalry corps, consisting of the 4th and 9th Cavalry Divisions, advancing on Charleroi, via Walhain St. Paul, covering the advance of the

SKETCH NO. 2

Situation opposite the German First and Second Armies, 20 August 1914, as described to the Commanders of the German First to Fifth Armies by the High Command.

German Second Army, drove back French cavalry in some minor engagements.

Late in the afternoon of 20 August the 9th Cavalry Division, on the right, reached Marbais. There, Captain von Löbbecke, commanding the 5th Squadron, 13th Uhlans, received orders to reconnoiter westward in the area: Marbais—Nivelles—Braine le Comte (north boundary)—old road: Marbais—Binche (south boundary).

The same evening, the patrol on the left flank of the reconnaissance squadron clashed with hostile outposts on the banks of the Piéton River west of Gosselies. The reconnaissance zone for 21 August, therefore, was limited in the south to the Canal du Centre as far as Condé, but prolonged in the north to Lille.

Without encountering any further opposition, Captain von Löbbecke reached the French frontier south of the line: Wiers—Peruwelz—Bernissart at noon, 22 August. The following night, however, a messenger reached the reconnaissance squadron in the woods northeast of Wadelincourt with the information that the patrols had drawn heavy fire at the outskirts of Condé. The squadron, therefore, moved on Condé on 23 August. Its reconnaissance revealed that the vicinity and woods north of Condé were held by French Territorial infantry. The enemy was purely on the defensive; there was no reconnoitering cavalry. Simultaneously, it was learned that the Scheldt crossings as far as Tournai, likewise, were occupied by the enemy.

SKETCH NO. 3

Situation on the left flank of the French and British forces, evening of 20 August 1914.

The identification of French Territorials at Condé was a very important piece of information. It disclosed the left flank of the British Army, as Territorial troops had never been used previously in the first line of defense and, therefore, it was correctly deduced that they were being used exclusively for security purposes.

In the morning of the 24th, patrols of the 9th Cavalry Division, operating in a southerly direction, identified, for the first time, British cavalry and infantry. In the afternoon of the same day, patrols of the IX and VII Corps reported that the

British zone extended eastward to a point half-way between Binche and Fontaine l'Evêque. With the knowledge that French Territorials were holding Condé, the extent of the British zone of operations was established, since it was also known that a group of French regular army units, constituting the left flank of the French Army, was concentrated at Charleroi.

On 20 August, Sordet's Cavalry Corps withdrew across the Charleroi—Brussels canal in the direction of Fontaine l'Evêque and occupied the canal crossings between Marchienne-au-Pont and a point south of Seneffe. On the 21st, the British Army Cavalry arrived at the area: Binche—Canal du Centre, from Boussoit to St. Ghislain, screening the advance of the British Expeditionary Forces. On the 22d, the British cavalry, after being relieved by infantry, joined the left flank of the British Army, covering the canal crossings as far as Condé.

As early as 14 August, General Joffre had requested the War Ministry to block the region from Maubeuge to the coast against German cavalry raids. However, the Territorial units of General d'Amade, designated for this purpose, were not ready to assume their mission until 22 August. Orders were issued by 8:00 AM, 22 August, to occupy the line of security leading via Valenciennes—Condé—Tournai to Dunkerque and the main line of resistance: Solesmes—Douai.

Limited zones in front of the armies will permit no greater speed under modern conditions than was possible for cavalry in the World War. Once contact with the enemy is gained, light motorized reconnaissance detachments will lack the strength to penetrate the hostile front. With the German First Army making a left turn, it was possible to reconnoiter to the flank, and this type of reconnaissance should be employed when the army is disposed in echelon and no highly mobile unit is available on the flank, as was the case in August 1914.

The 9th Cavalry Division identified the hostile exterior flank. However, distant reconnaissance to the west should have been combined with limited reconnaissance to the south beyond the Canal du Centre around the supposed French left flank. This would have disclosed the existing gap. When the division cavalry eventually went out on reconnaissance, the enemy had been able to close the gap and had established a continuous security line.

On 19 August 1914, aviation reconnoitering in the zone of von Marwitz cavalry corps, reported the presence of a hostile

corps at Walhain St. Paul. Actually, this corps was Sordet's cavalry. Coordinated action of air and ground reconnaissance is essential. In some cases, air reconnaissance must direct ground reconnaissance; on the other hand, in densely populated zones or woods, aviation may have difficulty in observing or identifying hostile positions and ground reconnaissance becomes necessary. Cavalry is even more useful in close than in distant reconnaissance, on account of its cross-country ability.

Motorized reconnaissance detachments will encounter cleverly erected obstacles and may be drawn into traps, or into the hostile zone of fire; such methods were employed by the French cavalry in 1914. Hence, cross-country ability is even more essential today than it was during the World War. River crossings probably will be blocked, for this reason, engineers should accompany the leading elements of a reconnaissance unit at all times.

The World War taught us that patrols must be supported by a powerful reconnaissance unit. Therefore, cavalry should be reinforced by tanks armed with artillery, possessing both cross-country ability and great fire-power. In 1914, the Belgian armored cars and cyclists worked hand in hand, despite their different speeds and the fact that they were restricted to roads. Similarly, with systematic training, cavalry and tanks should be able to work in close cooperation and prove their respective value, particularly, when motor vehicles are unable to use their speed due to hostile resistance or difficulties of the terrain.

TANKS AND ANTITANK DEFENSE DURING THE WORLD WAR*

(PART III—CONCLUSION)

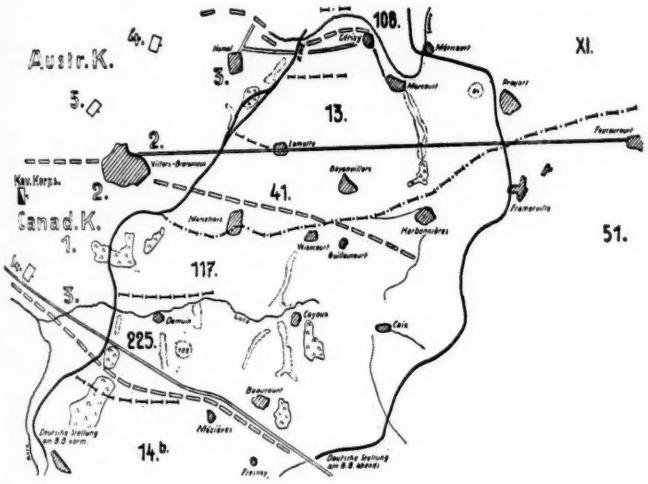
["Kampfwagen und Abwehr während des Weltkrieges." *Kraftfahrkampftruppe*, January, February, March 1937.]

Abstracted by Lieutenant Colonel S.J. Heidner, Infantry

The terrain between the Somme and the Amiens—Roye highway is characterized by numerous ravines and valleys leading north into the Somme and north and south into the Luce. At many points these ravines constituted tank obstacles. From

*See Quarterly No. 65 (June 1937, page 55), and No. 66 (September 1937, page 57) for previous installments of this series.

the Somme south to the sector of the German 41st Division, there were only narrow stretches over which tanks could attack the main line of resistance. Within the sector of the 41st Division, the only tank obstacles were the villages. In the sector of the 117th Division, the woods constituted a tank obstacle, while in that of the 225th Division, the small woods, the Luce, and a deep ravine were all tank obstacles. Only about a quarter of the entire front could be considered suitable for tank attack.



SKETCH NO. 7

The first objective for the British attack, which was to be reached by about 7:20 AM, was the line: west edge of Cérisy—east edge of Lamotte—east edge of Demuin. Two hours after arriving at the first objective, that is, at about 9:20 AM, the attack was to be carried forward to the second objective which was the line: east edge of Morcourt—west edge of Harbonnières—north edge of Cayeux—east edge of Mézières. From there the attack was to be pushed to the line: Méricourt—east edge of Harbonnières—Fresnoy, which was designated as the third objective.

The plan for the Australian Corps was to attack with the 2d and 3d Divisions in the front line. The divisions were to attack with brigades abreast. To each brigade there was assigned a tank company of 12 tanks. The 4th and 5th Divi-

sions were to follow and take up the attack when the leading divisions had arrived upon the first objective. On account of the greater distance over which the divisions of the second wave would have to push the attack, there were given more tanks; the 4th Division received 56, and the 5th Division, 42.

The Canadian Corps was to attack with its 2d, 1st, and 3d Divisions in front line in order from north to south, and its 4th Division in the second wave. The 2d and 1st Divisions were to carry the attack to the final objective, while the 3d Division was to be passed through by the 4th Division on the first objective. Each division received 36 tanks. The 2d and 1st Divisions were to use 12 tanks in the capture of each objective, while the 3d Division was to use its 36 tanks at the start since it had only one objective to take.

On the German side the divisions held their sectors with regiments abreast. In the regimental sectors, one battalion generally held the main line of resistance and the outpost zone, another was held in regimental reserve well forward, while the third was farther to the rear in rest billets. The artillery zone extended west to include the villages of Cérisy, Lamotte, and Demuin. The main line of resistance had been laid out so as to take advantage of commanding ground, and this resulted in the formation of several salients which were vulnerable to flank attacks. The position had not been completely organized anywhere; wire entanglements were not continuous and only a limited number of splinter-proof shelters existed.

The British put down a heavy barrage at about 5:20 AM which forced the defenders to seek shelter in dugouts and holes. The deafening roar of the bursting shells caused all communications to fail. The outposts were overrun without being able to give the alarm to the troops on the main line of resistance. As the troops on the main line of resistance began to be conscious of what was going on, the command posts and reserves were overrun. On parts of the front the visibility was limited to 10 or 20 paces. All along the front the story was the same. As the hostile barrage moved forward motor noises were heard. At first this was thought to be the noise of low-flying airplanes, and eyes were turned skyward. True, here and there hostile airplanes were combing the trenches laterally with machine guns. Then, suddenly, single tanks appeared. The Germans brought a few machine guns into action, but the tanks could not be stopped. They rolled on uninterruptedly. Directly

behind them came infantrymen, who threw incendiary bombs and hand grenades into the German infantry shelters, and then hurried on after the monsters. Where the tanks could not negotiate the terrain, the infantry failed to advance too. When the first wave had passed, the defending infantry reappeared in the organized centers and opened fire. But almost as soon it would be fired on from the rear with cannon and machine guns from two or three tanks which had succeeded in outflanking the resistance, and then the battle was quickly over.

In the Australian Corps, the 3d Division attacked the left regiment of the German 108th Division and most of the front of the German 13th Division. The tanks of this division generally were able to surmount the obstacles offered by the terrain. The leading tank platoons were given the mission of breaking through on a narrow front and then striking at deep objectives. The following platoons had the mission of reducing strong German positions, such as villages and woods, by envelopment. Within a few hours after the attack was launched, this Australian division had overrun the German main line of resistance, the regimental command posts, and the regimental reserves. The German front-line regiments were almost completely lost; only insignificant elements found their way to the rear. The Australian 2d Division attacked the right and center regiments of the German 41st Division. By massing its tanks against the center regiment, the Australian division quickly broke through the main line of resistance there, and then reduced the right regiment by envelopment. Both Australian divisions reached the first objective on scheduled time by 7:20 AM. In two hours, these divisions had overpowered the front-line and reserve battalions, had captured ten batteries, and had conquered a strip of ground from 2 to 3.2 kilometers in depth, measured from the German outpost line.

In the Canadian Corps, the 2d Division launched its entire strength against the left regiment of the German 41st Division. The infantry of this division began the attack without the support of tanks, and was repulsed. Shortly afterward, however, the tanks came into action, and then the German front-line and reserve battalion was sealed. The 1st Division attacked the entire front of the German 117th Division. This Canadian division could only employ tanks on its flanks because of the wooded area in the center of its zone. These woods were not reduced until they had been attacked from the rear by tanks

which had enveloped them from both flanks. This delay caused the Canadian 1st Division to arrive on the first objective at 8:15 instead of 7:20 AM. The 3d Canadian Division, which, as was related above, was to advance only to the first objective, attacked the right and center of the German 225th Division. This division attacked with one brigade north and one south of the Luce. The brigade attacking south of the Luce had attached to it 28 tanks; that is twice as many as were assigned to any other brigade of the first wave. In spite of its large number of tanks the Canadian 3d Division did not arrive on the first objective until 9:20 AM. This delay was due largely to the fact that the defender had been warned in time by tank noises, and had taken up positions on tank-secure ground. The German artillery on this front put down protective barrages on its own initiative, but the Canadians had passed through before the barrages fell. The Canadian Corps, like the Australian, had destroyed the bulk of the front-line and regimental reserve battalions on its front; it also captured 11 light and 5 medium or heavy batteries, and penetrated the German position to a depth of 4.8 kilometers at the deepest point.

As already stated, this attack was launched in a heavy fog which greatly restricted visibility. The attacking tanks were unfamiliar with the terrain. That they were able to drive around obstacles, and, in addition, conquer German resistance by frontal attacks and by envelopments, should be something to think about for those who believe that tank crews can't see. The defender, on the other hand, could not see sufficiently well to use his artillery and machine guns to good advantage.

The following incidents show the inadequacy of the antitank measures employed:

(1) In the Somme valley the engineers installed two mines on a meadow road on the preceding day. A tank drove over the road but nothing happened. Possibly the mines had been detonated by artillery fire.

(2) Attempts by the Germans to use overcharged hand grenades against the tanks in the open failed because the tanks were able to drive off their assailants. In a ravine, however, the Germans stopped a tank with a bundle of hand grenades, and captured its crew.

(3) At one place two antitank rifles concentrated their fire on a tank and stopped it. The hostile infantry following the tank stopped too. The rifles, however, were quickly outflanked

by other tanks and put out of action. Generally the bullets from the antitank rifles glanced harmlessly from the armor of the tanks.

(4) The two guns of a light battery assigned to antitank defense went into action in the open and destroyed a tank, but shortly afterward the gun crews were captured.

(5) The batteries located within the enemy's first objective were nearly all captured while they were still firing their defensive barrages. In most cases the tanks were not discovered until they were at the batteries. Most of the gun crews were captured.

(6) The village of Marcelcave lay within the attacker's first objective. In it were two German regimental headquarters and two reserve companies. Immediately adjacent to the village were three light batteries in firing positions. The visibility was so poor that the batteries could not open fire at all on the attacking tanks. The tanks enveloped the village from both sides, and caught the two reserve companies and one regimental headquarters in their shelters. By 7:45 AM, the village was in the hands of the British; few of the defenders escaped.

Pursuant to orders, the British resumed the attack at 9:20 AM, for the capture of the second objective. They now brought fresh troops into the battle. Against these the Germans could only bring their nearest rest battalions. The British attacked as in the first phase, the tank waves moving out ahead, and the infantry following. The fog had now disappeared, and the defender could bring his artillery and machine guns into action. The attacker found himself directly in front of the German batteries which he had not yet captured. These, however, were protected only by a few machine guns.

On the heights southeast of Cérisy, several reserve companies of the German 108th Division, supported by artillery from the north bank of the Somme, held their position until they were outflanked by tanks from the south. In the German 13th Division, a reserve battalion, at about 8:00 AM, had been ordered to occupy a position on the east slope of the ravine southeast of Morcourt. Hostile attack aviation and artillery fire so delayed the march of this battalion that it did not get into position until 9:45 AM. A little later another reserve battalion arrived and extended the position of the first. These two battalions resisted all frontal attacks, but when they were enveloped on both flanks by tanks, the troops fell back in dis-

order. The retreating infantrymen were attacked by tanks on the ground and by airplanes from the air, and the two battalions were simply wiped out. The German 41st Division had as reserves: one battalion in the south end of the ravine just mentioned, a half-battalion in the woods just south of the ravine, a battalion (less a company) east of the ravine, and a half-battalion north of Proyart. When the division commander received the report by a carrier pigeon that the main line of resistance had been penetrated in his south regiment, he started the bulk of these reserves towards Bayonvillers. They ran into tanks and fell back in disorder to the east bank of the ravine. A German antiaircraft artillery platoon appeared on the main road at this time and destroyed three tanks. Then British aviators appeared and threw smoke bombs into the ravine. Under cover of the smoke, the tanks enveloped the position which the reserves occupied on the east bank of the ravine, and then all resistance ended. A few energetic leaders, however, did rally enough men to shoot up a British cavalry unit which came up from the south. The German 117th Division had a reserve battalion in Guillaucourt, and two in Harbonnières. These had been alerted early, and ordered into the draw south of Wiencourt. Their march was delayed by hostile attack aviation and artillery so that they did not get into position until 10:00 AM. They were supported by a battery brought forward from a rest area. The battery was able to put six tanks out of action. With this support, the reserve battalions held until some hostile tanks worked their way through Wiencourt, and enveloped the position from the north, when they fell back. The German 225th Division attempted a counterattack south of the Luce with its reserves which consisted of only two half-battalions. The division artillery was captured before the counterattack was launched. The action failed, and the elements participating fell back in disorder. By 11:00 AM, the German 225th Division had been almost completely destroyed.

By 12:30 PM, the British were everywhere on their second objective. Most of the tank losses of the day occurred during this phase. This is explained by the fact that during the halt of the British on the first objective, the German batteries which had not been captured moved pieces out in the open where they were able to take the British tanks under direct fire when they resumed their advance.

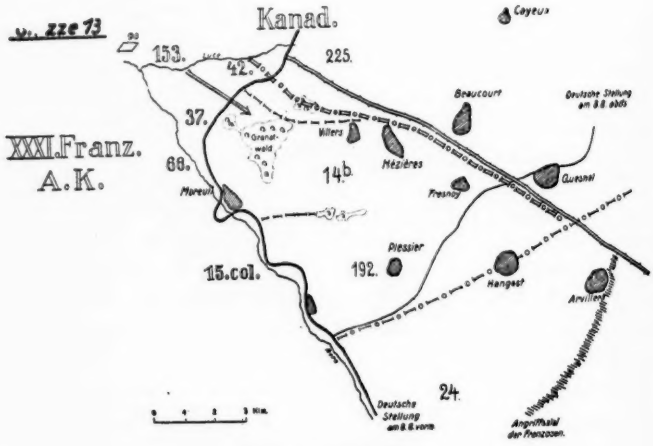
The British resumed the attack from the second objective with fresh troops. Even before arriving on the second objective, the Cavalry Corps had passed through the attacking infantry with one division north and one south of the Luce. Sixteen British armored cars now appeared on the scene. They had been towed over the difficult terrain by tanks.

The last reserves of the German XI Corps, two infantry battalions and an improvised artillery battalion, occupied hill 84 north of Proyart. One of the batteries disabled four tanks by direct fire. Then British aviators attacked the battery with machine guns and bombs. The attacking tanks finally succeeded in enveloping the position from the south, and the entire resistance crumbled. Only a few of the Germans got away. The Australians occupied the hill, but did not push their attack farther as they were now on their third objective. The armored cars followed the main road to Foucaucourt, then turned about and milled around in the vicinity of Proyart and Framerville, firing on columns and increasing the panic existing in the services of the rear. The front of the German XI Corps had been definitely penetrated. Aside from some weak elements still resisting at Méricourt, only an open breech faced the Australians. They had only to march forward; an attack was not necessary. But they failed to move; they had gained their day's objective! This halt in the attack permitted the Germans to close the gap with army reserves. By 10:00 PM they occupied a defensive position extending from Méricourt to Framerville with the 107th Division and two-thirds of the 243d Division.

The German LI Corps was more fortunate than the XI. It had as reserves at the beginning of the battle three rest battalions of the 1st Bavarian Division, three of the 192d Division, and the entire 109th Division. The Canadian Corps pushed its attack vigorously with the Cavalry Corps, which had passed through the 1st and 2d Divisions, and the 4th Division, which had passed through the 3d. The six German rest battalions put up stubborn resistance, particularly in the area: Cayeux—Beaucourt. But the results were everywhere the same. The German infantry could resist the hostile infantry and cavalry, but when tanks appeared on the flanks and rear of the German infantrymen, they would give way. The German 109th Division was ordered to the vicinity of Harbonnières to counterattack and secure the line: Harbonnières—Cayeux. The elements of this division had from 2.5 to 17 kilometers to march into posi-

tion for the counterattack. The leading elements of the division were attacked by British cavalry, tanks, and attack aviation before the division could form for the counterattack, and thus it was compelled to take up a defensive position which extended from Framerville to the southwest. From the German corps to the south, the 1st Reserve Division was sent to the support of the LI Corps. The leading elements of this division arrived in time to participate in the fighting about Beaucourt. But here also tanks turned the scale. The 1st Reserve Division was compelled to fall back to a defensive position. In the meantime the German 119th Division, reserve of the army on the south, also appeared on the scene, and was turned over to the LI Corps. At 6:15 PM, the corps commander ordered this division to counterattack to secure a line generally from Harbonnières through Caix, but darkness intervened before the action could be launched. However, the division had closed the gap that was forming in the center of the corps.

THE ATTACK OF THE FRENCH XXXI CORPS



SKETCH NO. 8

The French XXXI Corps attacked the left regiment of the German 225th Division and the right and center regiments of the 14th Bavarian Division. There were two and two-thirds divisions in the first attack wave on a front of 4 kilometers.

The French 153d Division followed as the second wave. The French started their attack without tanks because their light Renault tanks could not be used until after the German trench system had been conquered. Hence the tanks were all allotted to the 153d Division. Since the infantry had to break through the first resistance without tanks, a 45-minute artillery preparation was planned. The artillery bombardment was to start at the same time as that of the British, but since the British attack followed immediately behind their barrage, the French attack was scheduled to start 45 minutes later than that of the British.

The schedule for the French attack was as follows:

5:20 AM—Commencement of the artillery preparation
6:05 AM—Attack jumps off, first objective, the east edge of Granatwald
7:34 to 8:43 AM—Halt on first objective
8:43 AM—Attack continued, second objective, west edge of Mézières
10:05 to 10:45 AM—Halt on the second objective
10:45 AM—Attack continued, third objective, west edge of Resnoy.

Moreuil was not to be attacked from the front until 7:55 AM and, farther to the south, the attack over the Avre was not to begin until 9:20 AM. Thus Moreuil and the Avre position were not to be attacked until the envelopment from the north was beginning to make itself felt.

The French believed that the tank should be used to overcome resistance in villages and woods. They considered it a weapon for attacking objectives which the artillery could not see and therefore could not take under fire.

The French attack moved off as planned at about 6:05 AM. The combat outposts, which had been thoroughly shaken by the heavy barrage, were quickly overrun. As the attacking troops advanced farther, they encountered some heavy German machine guns which had weathered the bombardment, and the attack began to stall. Then a British tank appeared from the Canadian zone to assist the French, but each machine gun had to be fought down singly. The regimental reserves in the Granatwald were blocked by the artillery barrage and could not come to the aid of the front line. So the troops on the main line of resistance and the regimental reserves were attacked and defeated successively. The three rest battalions of the 14th

Bavarian Division, which operated farther to the north initially under corps control, reverted to their own division at about 8:50 AM. With these battalions the Bavarian division was able to hold the French generally along the east edge of the Granatwald until the French 153d Division with its tanks appeared. Then the Bavarian battalions fell back, and the battle of that division was quickly over. South of the 14th Bavarian Division, the German 192d Division held its position along the Avre until it was outflanked from the north. Although minus its three rest battalions, which were under corps control at Beaucourt, this division continued a stubborn resistance, especially at Plessier, and at dark it held the general line shown on Sketch No. 8.

This day, 8 August, was the "Black Day"; the day that brought the German army its greatest disasters. The British Fourth Army and the French XXXI Corps, with a combined strength of 8 rested and 8 tired infantry divisions and 3 cavalry divisions, accomplished more in less time than had been done before in the War. For the second time, the tank had helped the British not only to gain important terrain by an overwhelming attack, but also to completely wipe out the German garrisons which had been defending it. Seven German divisions were defeated, and two more which had just been taken out of line for reconditioning were forced back into the battle. The Germans lost from 650 to 700 officers, from 26,000 to 27,000 men, and 400 guns. Again for each tank destroyed, four guns were lost.

Although the British cavalry accomplished more in this battle than any other cavalry unit had done during the War, it failed in its mission of pushing forward to the Chaulnes—Roye railroad and thus opening a breach in the German front. The armored cars also failed to accomplish anything decisive or to report any essential information although they drove around for hours beyond the front. The armored cars should have been sent out for reconnaissance in front of each cavalry division. The cavalry, with the medium tanks attached to it, should have followed. Upon encountering resistance, a part of the cavalry, supported by tanks, should have dismounted and attacked frontally, while another part, supported by the remaining tanks, should have moved around the flank and struck the decisive blow from the flank or rear. Had the cavalry fought in this manner, it could have opened a breach which it would have been impossible for the Germans to close.

While the British, attacking with 8 infantry and 3 cavalry divisions on a front of 13 kilometers against 4 German divisions, penetrated to a depth of from 7 to 12 kilometers, the French with 5 infantry divisions on a front of 5 kilometers against 2 German divisions, penetrated only to a depth of from 5 to 8.5 kilometers. The British did not push farther because they had reached their third objective; the French were unable to gain their third objectives. There were several reasons for this. In the first place, the French were too methodical; they arranged for two halts on intermediate objectives. Then too, they employed too many troops for their narrow front, and they made a mistake in attaching all their tanks to the 153d Division. Finally, it must be remembered that the French light Renault tank, with its single weapon, was much inferior to the British tank.

The attack had been planned without making proper provisions against antitank defense measures. Had the Germans taken appropriate counter measures, the results of the battle would have been different. On account of the terrain, the tank attack was canalized initially into definite lanes. Antitank weapons properly placed to protect these lanes would have been very effective. There were no special antitank guns available, but the task could have been performed by the light artillery of the divisions. One battalion of light guns in each division should have been assigned to antitank defense. Some of these guns should have been emplaced well forward so that they could have taken the hostile tanks under fire before they reached the main line of resistance, while others should have been in position farther to the rear to prevent enveloping action by tanks managing to penetrate the main line of resistance. More use should have been made of antitank mines. It was known that the British particularly feared them. Finally, the German main line of resistance was too lightly held. It was doctrine that the main line of resistance should be held at all costs, but in all the divisions the infantry fire-power was so dispersed that this could not possibly be carried out. Had all these deficiencies been corrected, there might still have been local penetrations, but it is believed that these could have been blocked off, and that then the entire British attack would have floundered. The failure to take adequate measures for antitank defense again caused the German soldier to realize his helplessness when confronted by the tank, and caused him to lose confidence in the

command. On the other hand, the breaking of the front-line troops caused German General Headquarters to lose confidence in the soldier. Thus this battle destroyed the foundations upon which any further resistance could have been built. The armistice was the sequel to 8 August.

From now on the Germans worked feverishly at the construction of tanks of their own. Efforts were concentrated on light tanks and on a heavy tank which would have weighed over 100 tons. General Headquarters announced a production program for motor transport on 23 October 1918, which made mandatory the delivery of 800 light tanks by the spring of 1919. Two thirds of these were to carry a 37-mm gun in a turret and the command tanks were to be equipped with radio telegraph. Manufacture of the Model A7V tank was discontinued.

The production of means for active antitank defense was also pushed in earnest. A 13-mm antitank machine gun was designed. The first 50 of these were to be delivered by December 1918, and beginning with the following January they were to be manufactured in quantity. Besides this, an 18-mm antitank machine gun was being studied, of which two experimental models were to be delivered by the middle of November 1918. Between 1 November and the armistice, 200 improved 20-mm guns were delivered at the front; 1,500 of these were to be available by the following spring. An antitank cannon was improvised from existing material in three weeks time, and by the end of the war there were 500 of these at the front. A new 37-mm cannon was designed for use in tanks and for mounting on trucks for mobile antitank defense; 1,000 were to be ready by spring. There were also to be available by spring from 1,500 to 2,000 of the Fischer Model 37-mm guns which fired from 20 to 30 shots per minute. The artillery mounted 150 57-mm guns on trucks for mobile antitank defense. An armored shield for the gun and driver was to be provided, but these guns never reached the front. The artillery also reconstituted 52 accompanying batteries. The 100-mm guns and the 150-mm howitzers were provided with special projectiles for use against tanks which had broken through the front. These projectiles had a very limited splintering effect so as not to endanger the friendly infantry which might still be in the front areas. Even the engineers were provided with active means for antitank defense. Beginning with September 1918, they were provided

with flame throwers which were expected to be effective against observation slits and seams in the armor of the tanks. Of the above means for active antitank defense, the 18-mm machine gun, the 20-mm gun, the 37-mm gun designed as a mobile reserve, and the 57-mm gun mounted on a truck with partial armor as a "tank destroyer," all should have been very effective. But they were conceived too late.

After the battle of Amiens, the Germans also gave serious consideration to the question of passive antitank defense. Instructions issued on 10 August, called attention to the importance of considering natural tank obstacles such as water, swamps, and steep slopes in the organization of defensive positions. And on 15 August, general headquarters prescribed that not only fire-power, but also mechanical means, especially mine fields and road blocks, must be used to stop tanks. On the same day a tank officer was placed at the disposition of each army group commander to act as technical expert in advising the commander over which terrain hostile tank attacks were most to be expected.

The important role played by the tank in the final defeat of Germany cannot be overestimated. General Haig stated, "I do not belittle the spirit of our infantry nor the aptitude and determination of our artillery, when I state that the heroic deeds of these weapons could not have brought about the big results accomplished by our armies if they had not had the cooperation of the tank corps." The attacks supported by tanks succeeded wherever the tanks and infantry stayed together. Wherever the defender destroyed or turned back the tanks—and this happened only where they were improperly employed—the infantry stopped too. Where tanks broke through and advanced alone, they either fell victims to the German artillery or were forced to turn back. Where the infantry and tanks had been carefully trained together, and attacked in close conjunction, the results were overwhelming. We cannot forget the fate of a regiment of the German 108th Division, in the battle of Amiens, which was wiped out within an hour after the British attack jumped off; nor the tragic lot of the brave General Hoefer, in that same battle, who, at noon of the first day, drove above the battlefield in his automobile to spur on his division, but who could collect only a few fragments of his proud 117th Division—one of the best in the German army—because it had ceased to exist.

The assembling of large tank masses succeeded three times during the war in spite of the fact that the Germans had been previously warned. In each of the three battles the tanks were brought to within 1,000 yards or less from the front line on the last night. With the increased radius of action and speed of modern tanks, should not such surprise concentrations be even more feasible in the future?

The question is often asked if by organizing a timely construction program we could have had enough tanks at the beginning of our 1918 offensives to change the course of the war. It has been estimated that we could have had 200 A7V tanks and 500 or 600 light tanks available at that time. Without the aid of tanks, we compelled the British to give up large terrain areas twice and the French once. But in each case the combat strength of the German troops was exhausted in breaking through the hostile front. Now there is no reason to assume that this enemy, whom we could overrun without tanks, could have protected himself against tanks any more effectively than our troops did when they were attacked. Hence we have every reason to assume that if we had had the support of tanks, we could have made a successful penetration on the first day, and then the fate of the British army would have been sealed.

Are we at the beginning or at the end of the development of the tank? Those who think we are at the end claim that armor is worthless now because it no longer protects against special armor-piercing projectiles. If this were true, then every weapon would have to disappear as soon as a projectile were developed to destroy it. Then cavalry should have disappeared after the introduction of the breach-loader, and all infantry attacks should have broken down after the appearance of repeating rifles. A normal infantry division has ten different weapons which it can use against an unprotected infantryman, but it has only from one to three that are dependable against tanks. Is it reasonable then to abolish the armor and subject the crew to the effect of the other ten weapons? No, there is now only one really effective offensive ground weapon, and that is the tank. After 20 years of development the tank has passed through its childhood diseases, and is now beginning to emerge as a thoroughly competent engine of war.

And what about antitank defense? It has prospects for success only when every available means are exhausted. Just as the attacker will plan his attack around the tank, so the

defender must subordinate everything to his most important mission, that of antitank defense. And as the last resort, the only sure defense against the tank must be in the offensive which compels the enemy to employ his tanks there where they will be expected.

As a guide for the future, it is evident that the commander who will be most likely to win in the attack and who will have least concern that his troops will succumb to the specter of "tank fright," will be the one who has available the greatest number and the best tanks, who has the best-trained tank personnel, who understands how to employ his tanks to affect a final decision, who has infantry ready to follow up the tank attack, and whose infantry is imbued with the will to attack even without tanks.

THE COMMANDER-IN-CHIEF AND THE ARMIES OF THE AIR

["Le commandement en chef et les armées de l'air." By General Armengaud. *Revue Militaire Générale*, May 1937.]

Abstracted by Colonel O.L. Spaulding, Field Artillery

From time to time during the past few years, voices of authority have been raised in a demand for the appointment, in time of peace, of a single military adviser of the government, who should become, in time of war, the commander of all armed forces of every kind.

There is no problem which is more important or more urgent. Unfortunately, opinions are so divided that its solution does not seem near at hand. It has been the subject of a prolonged debate in the Chamber, which led to nothing; and it seems probable that the same thing will happen in the Senate. It has been discussed by Parliamentary commissions; and these, sometimes by unanimous vote, have taken opposite positions. Discussion seems to lead nowhere; we must seek a fuller appreciation of the problem.

To gain this understanding, we must first dissipate a certain confusion which is too wide-spread, in the conception of a supreme command. Oftentimes no distinction is made between the Ministry of National Defense and the function designated by the expression "unified command." It is suggested that since France has the Ministry of National Defense, they have no need of the unified command.

Thus, one of the leading Parisian newspapers wrote, after the debate in the Chamber: "The real commander of the French forces, in peace or in war, is the Council of Ministers. This Council has now delegated certain powers for the preparation and coordination of the armed forces of the land, sea, and air, to a ministry charged with the entire national defense. This minister, assisted by the Military High Commission, controls, as harmoniously as can be expected, the operation of the immense machine."

This conception, in our opinion, is faulty.

It does not distinguish coordination in the construction and preparation of the "immense machine," and the coordination of the three national armies in their operations against the enemy. The first is the task of the Minister of National Defense; the second is that of a commander. It fails to take into account certain necessities in the conduct of the armies of the land, sea and air. If these armies are really to cooperate, their command cannot be exercised by a committee.

How can anyone maintain, in France, that a committee can coordinate operations against the enemy at the opening of a war, when our country has stood in the shadow of imminent defeat at the two most decisive moments of the war, for lack of unity of command?

Is it necessary to recall the preliminaries of the battle of the Marne in 1914?

In 1918, an interallied High Commission prepared the conferences of the heads of the allied governments, assisted by their commanders-in-chief; the purpose of these conferences was to coordinate the efforts of the Allies in maintaining or in developing their war strength, and to prepare directives for the combination of the operations of the allied armies. Nevertheless Clemenceau, head of the government, minister of war, but in reality minister of national defense, learned by experience the inadequacy of this system, and stated this opinion to the Allies.

The supporters of unity of command are then justified in claiming that a minister of national defense—who, by the way, has not as yet any organization except a secretariat general—is not enough. There must be another agency, in time of peace, a single technical adviser for national defense, who shall become, in time of war, the sole or at least the principal commander of all armed forces, with a small staff as a nucleus for Supreme

Headquarters, engaged in preparation for combined operations of the land, sea, and air armies.

It remains to be considered, what operations should be combined.

On this point, the advocates of a single command show a lack of realism, which comprises, perhaps even prevents, the success of the reform which they themselves demand. They meet great and perhaps insurmountable difficulties, by confusing that which is secondary and disputable, with that which is primary and indisputable. Complete subordination of the navy to a unified command is secondary and disputable; coordination of the operations of the armies of the land and air, perhaps also of the sea, is essential and indisputable.

To overlook this distinction is to miss the point of the whole argument. There always have been two separate armies—land and sea—with well separated theaters of operations. There was no unity of command, and no one thought of it. It is the appearance of an independent army of the air which makes a united command necessary today, just as the creation of a ministry of the air has led to the creation of a ministry of national defense.

Since the creation of this army of the air, the larger part of the air forces is autonomous. Its operations, over either land or sea, under the orders of its own chief, may be quite independent of those of the armies of the land or sea. This leaves no place for unity of command, either on land or sea. This is the great and unquestionable defect in our system of command which must be corrected.

Now the theaters of operations of the land and sea armies remain separate. The navy evokes from a vanished age the specter of Trafalgar, and insists that naval forces require only the broadest of directives for their operations on the high seas. The government considers that the argument is just, and that it is perfectly qualified to announce directives, prepared by the military High Commission, and equally qualified to supervise execution. It sees no reason to delegate this mission to a single commander-in-chief. To do so would, as a matter of fact, be adding to the burden of the principal commander.

On the other hand, there is a zone where the two armies have not clearly separated theaters of operations, and where their operations should be controlled by a common chief; that is, on the coast. The navy will freely admit this; for the defense of the coast has been entrusted at various times, according to

circumstances, to either the army or the navy. The navy will admit also the necessity of a single commander to control all three armies, at moments when the main body of the air forces is withdrawn both from independent air operations and from combined action with the land forces.

Finally, the navy has never disputed that combined operations, such as those of the Dardanelles in 1915, should be handled by a single commander, controlling all the elements of the three armies serving in a single theater. This commander should necessarily be a direct subordinate of the principal commander, the sole technical adviser of the government.

This highly complex function of an integral centralized command, so difficult to work out with respect to the navy, might well be replaced by a function more restricted and more easily exercised as far as the navy is concerned. To this the navy could make no serious objection.

On the other hand, unity of command must be extended without restriction, to the armies of the land and of the air. The question here is entirely different. In the first place, the autonomous army of the air is made up almost entirely of land planes. It is, *a priori*, intended specifically for land operations. Secondly, the air and land forces are mixed in times of peace, and will be so in war. Their operations will overlap, and will often be connected one with the other by the sequence of events. There can be no question here of a High Commission to coordinate operations; the very first events of any war would urgently demand a single commander.

It has seemed possible to dispense with this single commander heretofore, because the army of the air was relatively small. This argument is no longer valid, in view of the constant and rapid increase of the army of the air.

The concept of a principal command avoids also a serious objection which might be raised to a single command. In conscience, the Minister of National Defense has said, an officer should not accept the appointment as sole commander unless he was, in time of peace, technically competent in all three armies. Let us accept this argument at its face value. We believe, however, that an officer might conscientiously accept the responsibilities of supreme command, up to the limit fixed by this law of strategy: "Unity or continuing interdependence of theater of operations, and unity or continuing interdependence of mission, call for unity of command."

Within these limits he will require no special competence in naval affairs. On the contrary, he should have such competence with respect to the other two armies. But such competence is necessary to a commander of the land army, or of the air army, separately. Battle, however one may conceive it, is today the affair of the land and air armies at once, combined and opposed. The technique of each army influences the other. Commanders on land or in the air cannot be content with the technique of one, disregarding the other; their minds must make the synthesis of both. And moreover, the future supreme commander must realize that, in his plans, he will have less to deal with tactics than with strategy, based upon the existing possibilities of tactics; and that the laws of strategy are the same, on different scales, in all three elements.

The War Ministry would accept the proposed unity of command because it sees, increasing from year to year, the danger resulting from lack of coordination in the command of the armies.

The Navy would hope to secure by it, relief from the anxiety caused by the weakness of the coast defense and of the naval air service.

The Air Service, torn in three directions by the requirements of its triple mission, air, land and sea, would find relief, and would have reason to hope for stability.

The high command of the air force fully realizes that unity in the army of the air and unity in the air and antiaircraft defense can be realized only by such a principal commander, since he alone can have authority, without intervention of the government, over all the elements of the army of the air and of the air defense, which are necessarily scattered and dispersed among the three national armies.

Passage from the present organization to that just outlined could be made with perfect ease. The organization of the high command of the land army is perfectly adapted to make the commander of that army the principal commander for war, his chief of staff becoming the commander in the most important theater of operations.

It is perhaps well to repeat that this organization of command is the logical completion of the work begun in 1935, the creation of the army of the air, which would be unfinished without it. It would solve the difficult problem of the necessary centralization of the air and antiaircraft defense of the armies

and of the national territory; and it would make the Ministry of National Defense a living reality. It would leave to each department its own chief of staff; it would give to an inspector general of the armies, principal technical adviser in time of peace and designated as principal commander in time of war, a position symmetrical with that of the Minister of National Defense; and it would respect the constitutional prerogatives and responsibilities of the government.

THE DEVELOPMENT OF MOTORIZATION IN THE ARMY

Its Consequences in What Concerns the Cavalry

["Le développement de la motorisation dans l'armée. Ses conséquences en ce qui concerne la cavalerie." By General Boucherie. *Revue de Cavalerie*, March-April 1937.]

Abstracted by Major L.K. Truscott, Jr., Cavalry

Permanence of great principles.—The author states that the great principles which govern the conduct of war are immutable; only the manner of execution is modified by progress. The end remains the same: To impose by force one's will upon the adversary. While the ancients possessed only hand arms, moderns possess means that grow more powerful: fire arms, aviation, gas.

Progress. Its consequences.—Under this heading, the author states that routine and not knowing what admits of improvement always delay the adoption of new means. Doctrine adapted to new means is established slowly because it is the result of their adoption. New doctine for a clearly characterized progress would stand out clearly and precisely if the consequences of the progress were first determined, and a doctrine capable of exploiting them sought. The most complicated problems appear simple when details, in which the mind hesitates and loses itself, are neglected in order to determine the outline. Progress rests on technical development. Study of consequences of progress risks chimerical conceptions when the matériel which governs the practical exploitation of technical development is neglected.

Motorization in the cavalry.—The author states that the development of motorization in the cavalry, sometimes paralyzed in its modest beginnings by an exaggerated respect for

tradition, is an imperious necessity when the general consequences of the problem are understood. Present evolution of cavalry toward the machine, while already emphasized, seems very incomplete.

The role of the horse.—Cavalry has owed its fundamental characteristic—mobility—to the horse. The horse has been a means of rapid maneuver which permitted cavalry to fulfill its mission of reconnaissance and security, and a means of combat which permitted striking the adversary before he had time to employ his arms. In the past, cavalry has been divided between two tendencies: one endeavored to augment mobility by quality of horses and reduction in weight carried; the other sought to develop combat power by armament. To satisfy these tendencies, aimed at different ends, two types of cavalry were organized: light cavalry for rapid maneuver, and heavy cavalry for actions in force. The adoption of rapid fire arms ended the debate.

Mounted action paralyzed by fire.—Under this heading the author states that cavalry, paralyzed by fire and thus incapable of intervening mounted on the field of battle, abandoned its sabres for combat on foot. The horse ceased to be an instrument of combat and became a means of maneuver. This evolution drew the cavalry to search for means to increase its mobility and add to its combat power; progress in aviation permitted reconnaissance even of hostile rear areas, and assured to liaison the rapidity required by increased mobility.

Cavalry and the machine.—The author states that improvement in automobile construction opened wide horizons to reorganizers of cavalry, and permitted foreseeing the development of motorization in cavalry under three forms:

Development of fire-power and mobility by adoption of motor transport

Augmentation of power of cavalry by adoption of armed and armored combat machines

Organization of especially mobile cavalry formations by substituting mechanized vehicles for the horse.

Elements of power of horse cavalry.—The author states that mobility and combat power of horse cavalry depend on:

Speed and radius of action of reconnaissance, security, and liaison agencies

Dimunition in weight carried by the horse

Number of automatic arms and reserve of ammunition carried by the soldiers

Possibility of bringing reinforcements rapidly to a sensitive point.

He points out that these considerations show the importance that automotive development has for cavalry, and that automotive means can be sought for specific ends. He concludes that the evolution of cavalry toward the machine, instead of being empirical, fragmentary, and hesitating, could be definitely stated from the beginning, and technicians oriented toward problems to be solved.

The new doctrine.—The author thinks that the study of consequences of motorization should orient the mind toward a doctrine more in harmony with new possibilities than the limited doctrine established little by little, and often long after the material development is an accomplished fact.

Thus, the higher command is prepared to employ its forces in wide formations with the certainty of being able to inform them, to cover them, to direct them, thanks to the rapidity of motor reconnaissance and liaison. It does not hesitate to extend in speed and radius the movements of horse units with motorized trains. It can give its maneuver accentuated strength by bringing up rapidly reinforcements in arms, munitions, and men. It seeks in close combination with aviation the immediate information protection, and rapid support, that requires exploitation of the mobility of mechanized vehicles. The new doctrine avoids the hesitations that follow placing new engines in service before their purpose is determined.

Cavalry and the armored vehicle.—A logical result of motorization is to give back to the cavalry a part of the offensive power it had lost. It was obvious that armored cars, tied to the road, could have but limited use, but it was certain that technical progress sooner or later would develop machines capable of rapid cross-country movement. Thoughtful minds could foresee the day when cavalry would be equipped with machines capable of accompanying it or even preceding it.

Objective examination of results of these developments permits establishing principles of the doctrine which assures their complete exploitation. Capabilities and limitation impose:

Possibility of rapid and economical motor reconnaissance in liaison with aviation

Possibility of establishing sound security dispositions quickly and distant, with motor vehicles

Possibility of assembling in minimum time, a force capable of developing, in cooperation with aviation, strong offensive power

Necessity of subordinating employment of mechanized vehicles to terrain, on which they are closely dependent

Necessity of taking special measures for security of horse units against attack by mechanized vehicles

Necessity of adopting means of combat capable of completely utilizing the power of the new engines.

Commanders of all echelons can prepare, therefore, for application of broad principles of the new doctrine, even before actual realization of machines has fixed their employment.

Totally mechanized cavalry.—The author states that the organization of large units of totally mechanized cavalry was imposed the day when progress permitted organizing large units of motorized infantry. Since the horse could not provide the speed and radius of action necessary for providing information and security for the large units, the cavalry had to replace horses by machines.

Study of missions which large units of mechanized cavalry should fulfill shows that it should possess:

Offensive means to make contact and break local resistance

Defensive means to permit holding terrain for its own profit or for profit of large units that employ it.

Employment of large mechanized cavalry units depend on limitations in matériel, terrain, visibility, fragility, and needs for supply. These limitations are the basis for organization. They limit, in a proportion that will be modified in accordance with technical progress, the relative importance of offensive means (mechanized vehicles, artillery) and defensive means (foot soldiers, automatic arms, artillery). They imply powerful means of liaison and communication.

Organization of a large unit of mechanized cavalry is tempting on account of qualities of mobility and offensive power that such a unit offers, but its realization at the present time would risk leading to worse deceptions for this unit would be incapable of possessing itself of terrain obstacles necessary for

its maneuver, of holding a position taken, of guarding by day and night its parks of supply and evacuation.

Principles of employing a large mechanized cavalry unit are the same as those for a large horse unit. They should tend to exploit the characteristics of the unit (speed, offensive power), and to minimize the weakness (dependence of terrain, vulnerability, crowding, fragility). The great principles that govern the employment of all units, whatever their technical organization:

Principle of liberty of action for the commander
Principle of economy of force
Principle of coordination of effort

are imposed in the conduct of a large unit of mechanized cavalry.

These common sense considerations, based on results of progress, permit stating the general doctrine of employing a large mechanized cavalry unit even before it is organized. This doctrine must harmonize with technical development; for that reason it cannot take an immutable character; it should always aim to exploit more completely the two characteristics, mobility and fire-power.

Conclusion.—Under this heading the author states that it is easy to discuss the consequences of motorization when it is already more or less realized, but he points out that to be useful, it is necessary to draw from such an examination of the past, lessons for the future.

He states that evolution imposed by progress is constant; and that all human organizations must adapt themselves to progress or perish. Military organizations cannot escape this common law. Industrial organizations can adapt themselves without difficulty because progress corresponds to immediate material realities; it is not the same for military organizations because reality for them is represented only by war.

The author thinks that present machines are only the outline of those that will be developed in the future. He states that increased mobility and power of matériel, utilization of telemechanics, close cooperation between ground and air machines, and possible construction of machines capable of fighting both on the ground and in the air, constitute new horizons capable of development and permit foreseeing large units of mechanized cavalry of which limits in mobility and power cannot be fixed.

The author thinks that leaders of all ranks should not forget the present reality, but that they should create by an effort of mind the reality to come, and should apply the progress of this reality in advance.

He thinks that effort is imposed on the cavalryman, if in the sentiment of the magnificent role of his arm, he wishes to live *en avant* of other arms in order to better inform them first, to better protect them next, until the hour when he comes to fight beside them.

BOOK REVIEWS

THE SIEGE OF ALCAZAR

BY

MAJOR GEOFFREY MCNEILL-MOSS

Illustrated. 313 pp. . . . Alfred A. Knopf, New York

This is the story of one of the supremely heroic military episodes of all history. It belongs with the great tradition of Troy, Thermopylae and other classics of superhuman courage. It is Verdun and the Lost Battalion rolled into one. Only one year ago it was being written for the ages with the blood, the inconceivable suffering and the unconquerable spirit of more than 1,700 souls.

Major Moss takes us back twelve short months to that day when Colonel Moscardo, commander of Toledo's grim historic fortress, elected to join General Franco's rebellion against Madrid's legally elected government. Recognizing the pronounced republican sentiment in surrounding towns and villages, the Colonel called into the Alcazar 600 members of the Guardia Civil and their families; 150 army officers, active or retired, who rallied to his side and 160 young soldiers under his command. A few score of Fascists and Monarchists, with their wives and children, also sought refuge in the fortress which became the symbol of the Old Order of Spain.

Of these 1,700 Spanish anti-republicans, 520 were women, 50 were children and about 100 were men either too old or unfit for service. For seventy terrible days this isolated little band bore indescribable tortures of body and mind and elected what seemed inevitable death rather than surrender. One by one the four great towers of the Alcazar were torn away by incessant bombardment. Wall after wall crumbled above their heads. Without electricity, they existed by the light of crude candles manufactured in the dungeon-light lower depths. Without bread, they provided one thin cake of pulverized wheat for each man, woman and child per day. For two months none was able to wash, since water was too precious. For weeks the stench of the decaying bodies of their dead comrades filled their nostrils and caused increasing fits of vomiting. The moans of

the wounded, many of them enduring amputations without anesthetics of any sort, were constantly in their ears. In this dread atmosphere the aged died of privation and shock, two babies were born, and on two occasions the women voted unanimously with their men that they would remain until death claimed the last of them. The Alcazar would never be surrendered. It never was.

By a miracle the majority lived until September 27 of last year, when relief came as the last of three great mines had just shaken the crumbled remnants of the Alcazar like a torpedoed ship receiving its coup de grace. The survivors had lived on thin strips of horse meat and mule meat for weeks on end. At that moment only five mules and one horse remained, wheat and water enough for six more days. In those final hours men, so weak that they could not climb the rocky ruins to reach their posts, were hauled up by pulleys, with ropes looped under their arms. They emerged at last like fleshless ghosts out of the catacombs of death. The spark of live was so low that they could scarcely cheer. Another ten days and not one of them would have been alive. This is the story of the defense of the Alcazar.

With the most painstaking care and with a military man's expert knowledge of the technical problems, Major Moss has pieced together an account of the siege which cannot fail to be an invaluable historical record. He has told the story with a restraint which is remarkable and, sometimes, almost too extreme. From conversations with the surviving defendants and such meager records as were kept, he has re-created a day-by-day account of every angle of the military defense, the time and degree of aerial and artillery bombardments, the repeated attacks of Madrid's raw and untrained volunteers; and the way in which the brains and experience of 150 officers—plus an almost impregnable fortress—outmatched them by the narrowest of margins. It should be added that the book is illustrated with thirty-eight pages of the most graphic photographs and by maps which are of inestimable value to the reader. In this respect Major Moss has done a superb piece of work.

THE UNITED STATES ARMY IN WAR AND PEACE

BY

COLONEL OLIVER SPAULDING

Maps . . . 541 pp. . . . G.P. Putnam's Sons, New York

Here is a stirring account of the evolution of the United States Army from the handful of ragged colonists under General Washington in 1776 into the mighty war machine which turned the tide of the World War in France under General Pershing in 1918.

This book is not a military history of the United States but a history of the United States Army as an institution, and its contributions to the security and upbuilding of the nation. Colonel Spaulding makes clear the invaluable services it has rendered in peace as well as in war. In the long intervals between wars he shows the Army as the spearhead of our advance into the unknown West, and he brings to light the all-but-forgotten epic of the Army's century-long struggle to pacify the Indians and open communications for the settlers. He also tells the story of the little known but invaluable series of Army explorations carried on from Mexico to the shores of the Polar Sea.

His handling of the role of the Army in the six major wars of the nation is masterly. With an unerring eye for the human essentials as well as for the drama of war, he enables us to understand the problems, accomplishments, and blunders of each campaign. With fine impartiality he analyzes the personalities of all the great commanders from Washington to Pershing.

In his commentary on the Revolutionary War we gain an added comprehension of the difficulties and problems of Washington and his collaborators in creating out of the unorganized colonists an army able to struggle successfully against the trained forces of England. In the War of 1812 we see the raw levies of the citizen soldiery under the leadership of Scott and Jackson withstanding the full might of Wellington's veterans. In the Mexican War we follow Scott on that epic march to Mexico City, a march which the great Duke maintained was impossible of execution.

The Civil War witnessed the fulfillment of a century of military evolution. The Army, decimated by defections to the

South, reconstituted itself from untrained volunteers and emerged triumphant from four years of warfare as savage as any in history. Colonel Spaulding pays full tribute to the courage and devotion of the South as well as the North. His analysis of this conflict is a distinct contribution to our understanding of that greatest of all American struggles.

The Spanish war demonstrated the ability of a small professional Army to leaven the raw recruits who were called into service overnight, and to create a military machine capable of successful operations on such far flung frontiers as Cuba and the Philippines. The World War witnessed the same phenomenon on a vast scale. Colonel Spaulding does full justice to our Army abroad, showing its decisive importance in insuring the Allied victory.

In the concluding chapter he shows the Army in the myriad roles it plays today, from supervising the C.C.C. Camps to protecting the Mississippi Valley from floods.

EUROPE IN ARMS

BY

CAPTAIN B.H. LIDDELL HART

287 pp. . . . Random House, New York

Mr. Hart gives an outline of military conditions in Europe in the three parts of his book. The first part is a summary of the armies of the five great military powers of Europe, with estimates of the progress each country is making in rearmament. Then follow informative analyses of the new problems which an army or a fleet must now face in the event of war—with greater emphasis on the effect of the new developments and discoveries on the defense problems of his own country. Brief chapters give an outline of the general German view of war (well known from the speeches of Hitler and the military and other publications of Ludendorff—his *The Total War* and other almost numberless publications), an attempt to compare the next war to the last one and a few speculations as to the effect of the next war on civilization. Some brief notes on Spain, received at the last moment, are appended. There are valuable chapters on military training, the higher education of army officers and on the higher direction of armies.

The statistics and comments about the five different armies, the new methods of armament and the progress made, and the tactical ideas and plans of the several countries, will be read with unusual interest. Liddell Hart discusses at length his conviction that mechanization and motorization of the armies add in general much more to the power of defense than to the power of offense in war. This has been evident from the American Civil War and on through the several succeeding conflicts. In fact, with the introduction of the first simple machines as firearms for soldiers, on to the development of the modern complicated weapons of fire the deadly effect of fire from protected positions has constantly increased.

Mr. Hart finds confirmation of his general views in the reports he has received from Spain. He feels, however, that the modern air bomber is a weapon which is peculiarly powerful for offensive operations and which in many circumstances will be the chief threat to the solidity and endurance of the defense. Mass armies, smaller and more highly trained armies, the selected quick-moving mechanized groups, dangers to mobilization, the counteroffensive, efforts to facilitate movement by darkness and fog, and other tactical and strategical plans or devices, all come in for lengthy discussion. That old and valuable asset for those working to secure funds for further armament—the illusion that the offensive is always the best defense —receives heavy criticism.

The clear discussions about the capital ship, England's food supply and the triple menace to ships of commerce and of war of bombs from the air, the surface and from under the sea, the role of the small British army and the future of the Mediterranean are most interesting. Mr. Hart's anxiety about the wisdom of his Government's position on two of these questions is evident. He doubts the wisdom of England's commitment to send a land force to the Continent in certain circumstances. He feels that, in addition to the support the fleet may give, the air forces—with their power for the attack—are more suited for an expeditionary force to the mainland of Europe. He believes, also, that the outlay of funds for more aircraft carriers and smaller and fast seacraft would be a better investment for Britain than the expenditure of the huge sums necessary to construct several additional battleships.

THE STORY OF SECRET SERVICE

BY

RICHARD WILMER ROWAN

Illustrated . . . 732 pp. . . . Doubleday, Doran & Company, Garden City, N.Y.

The Story of Secret Service is what the title implies. It reaches back for thirty-three centuries and traces the technique of a subtle art, beginning with Delilah, who "used her sex to gain intelligence from a powerful enemy, playing the model confederate, resolved to earn the eleven hundred pieces of silver promised her by the lords of the Philistines."

The French Revolution and the Napoleonic Age give Rowan matter for a brilliant series of chapters, through which stalk the grim figures of Fouché, Montgalliard, the Baron de Batz and a host of others. Réal and Desmarest, Fouchés able subordinates—perhaps his very brains—made use of a horribly effective device, which they called the Test of Fidelity. "Each victim and potential espion had to provide them with a permanent hold upon him by committing some directed crime at the outset. Evidence of the compulsory felony was then preserved with the other documents relating to the case and, if need be, found useful in discrediting him with any friends he had in a hostile camp, whose plotting he might be ordered to expose."

The master spy of all time would appear to have been Wilhelm Stieber, Bismarck's agent, whose intelligence exploits paved the way for the Prussian conquest of Austria and the Franco-Prussian War. The vilest informer was the Dubliner, Leonard MacNally, a lawyer, who betrayed his clients, his friends and the cause he pretended to worship. He sold Robert Emmet for £1,000, volunteered to defend him in court, and after he had been sentenced to death leaned over and kissed him. Azeff, the Russian agent provocateur, however, ran MacNally a close second.

One-third of Rowan's space is given to the period of the World War. He sifts out the good grain from the harvest of memoirs previously published, and he clears up several mysteries. He proves once and for all that Fraulein Doktor, of Antwerp, was not the second-rater, Anna-Marie Lesser, but Elsbeth Schragmuller, a highly educated young woman of good family. He puts Mata Hari in her true perspective.

MARSHAL NEY: A DUAL LIFE

BY

LEGETTE BLYTHE

Illustrated . . . 356 pp. . . . Stackpole Sons, New York

Marshal Ney, the most picturesque of Napoleon's generals and the boldest of his battle leaders, seems to have been predestined to become a leader of men.

An impetuous, audacious youngster, Michel Ney was marked for the law by his father, who had served as a sergeant in the Seven Years' War. But Michel thought differently. At school he was more interested in battles than in books and during the few years he worked in an office, much of his time was spent in looking out of windows at the soldiers marching and counter-marching on the parade ground of the nearby barracks.

At the age of 20 he threw up his job, kissed his mother and sister good-bye with the remark to the latter—"When I come back you will be married and I will be a general"—and tramped off to join the army.

It took young Ney three years to advance from private to corporal; but in two more years, and with active service presenting the opportunity to display his prowess in battle, Corporal Ney advanced through the rank of sub-lieutenant to that of colonel, at age 26. At 27 he was a brigadier and at 30 a general of division. At 35, Napoleon conferred upon him, in company with Kellerman, Berthier, Massena, Soult, Murat, and twelve others, the rank of Marshal of France—the day after Bonaparte became emperor.

The author is at his best in the account of the retreat from Moscow. Performing prodigies of personal valor, Ney as rear guard commander repeatedly saved the Grand Army from extinction, after it had dwindled, frozen and exhausted, and hard-pressed from flanks and rear by the pursuing Russians, from a half million men to a mere handful. Blythe paints an amazingly realistic and complete word picture of that historic Napoleonic blunder, wherein is immeasurably increased the stature of the rear guard commander who bore the brunt of the fighting

The story of the years from 1815 to 1846, when Mr. Ney died in the home of a North Carolina physician, is based on the overwhelmingly persuasive evidence of many original docu-

ments, letters, interviews with old inhabitants and the descendants of Southerners who have preserved the memory of the man.

This dramatic, fascinating story will hold to the last exciting page the interest of every officer and man who loves his military history. It breathes the brilliant, unconquerable spirit of a fighting soldier, and it leaves the reader with the sincere conviction that Napoleon's greatest marshal and the North Carolina school teacher are one and the same.

ZEPPELIN: THE STORY OF LIGHTER-THAN-AIR CRAFT

BY

CAPTAIN ERNST A. LEHMANN

Illustrated with photographs . . . 365 pp. . . . Longmans, Green & Company, New York

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Captain Lehmann, one of the ablest of airship captains, lost his life in the wreck of the Hindenburg after serving for years in experimental airships before the war and facing death many times in the air on wartime raids. Commander Charles E. Rosendahl, foremost advocate of the rigid airship in this country, in a foreword writes of Lehmann as a man of charm, courtesy and keen intelligence. And yet as the pages of Lehmann's book are turned one wonders if he appreciated the effect on his reader of his description of airship raids. He was a soldier acting under orders, and he may have loathed his missions, but seldom does he give an indication that he would like to forget some of the things caused by his bombs.

One cannot help having a reluctant admiration, however, for the courage of the men who flew those early airships over the North Sea and the Channel in bad weather. The worse the weather the more successful the flight for a dirigible needed clouds in which to hide from antiaircraft guns and airplanes. They lived a detached life in surroundings as eerie as a Vernesque dream.

"We climbed the smooth aluminum ladder leading to the walkway inside the ship. The head-winds blew icily between the car and the body of the ship, pressing me to the ladder, and my gloved hands clutched tighter around the rungs. It sometimes happened that a man was overcome by vertigo and slid off, falling 8,500 feet into the North Sea. * * *"

Not all of Lehmann's book is of war and death in the air, for he devotes at least half of it to Count Zeppelin, the early pre-war experiments and the astonishing flights made by Dr. Eckener in the Graf Zeppelin—flights which proved that an airship can combat any sort of weather in skillful hands and that with helium it should be one of the safest means of transportation. The old count's dreams may yet be fulfilled.

THE NILE—THE LIFE-STORY OF A RIVER

BY

EMIL LUDWIG

Maps . . . 619 pp. . . . The Viking Press, New York

Critics are agreed that this book, published early this year, is Ludwig's greatest. As we follow the course of the Nile, originating in a primordial land of wild beauty and maturing amidst our ripest civilization, there arise before our eyes all the shadows of the past: an endless train of historical figures, the warring tribes, the strange races, that have desperately fought and struggled for existence along its shores.

Here is the story of Solomon and the Queen of Sheba; of Alexander the Great; of Abyssinian slave markets; of Caesar, Antony and Cleopatra; of Stanley's heroic discovery of Livingstone and the Congo; of Bonaparte; of Lord Kitchener—and countless other heroes, adventurers and madmen who make up the splendid pageant which has followed the course of the Nile.

Through it all the protagonist of the story remains clear. The Nile, mighty artery of life to land and people, flows majestically through the ages while humanity grubs and claws on its banks.

SOME TYPICAL OPINIONS

The Nile stands among the finest of Emil Ludwig's works for its sheer exuberance in descriptive passage, its wise weighing of historical factors, its recreation of famous scenes and its deep human sympathies.

—HARRY HANSEN, *N.Y. World Telegram*

Is based on a magnificent conception and, I think, develops it with extraordinary skill and passion. Few books that I have read of late have afforded me more solid pleasure.

—CLIFTON FADIMAN, *The New Yorker*

Is not only one of the best things he has ever written but also one of the most richly rewarding of recent serious publications in any field.

—HERSCHEL BRICKELL, *N.Y. Evening Post*

What a river! What a life story! Neither the Ganges nor the Yangtse, the Amazon or our Mississippi carries such a flood of story with its water. . . . *The Nile* is, I think, Emil Ludwig's best book.

—LEWIS GANNETT, *N.Y. Herald-Tribune*

OLD FUSS AND FEATHERS
(The Life and Exploits of Lieutenant General Winfield Scott)

BY

ARTHUR D. HOWDEN SMITH

386 pp. . . . The Greystone Press, New York

He was, in the somewhat indiscriminate words of his present biographer, "The Only American Commander Who Never Lost a Battle—The One Victorious General to Lose a Presidential Election—Patron of Lee—Protector of Lincoln—Most Inept of Politicians—Strategist—Statesman—Humanitarian." He fought, with exceptional gallantry, in the War of 1812, and was one of the two officers to emerge from that conflict with enhanced prestige. He was in charge of the forts at Charleston during the nullification crisis of 1832, and his tactful handling of that explosive situation was in part responsible for its peaceful solution. He averted war on the Niagara frontier in 1838 and allayed the hot tempers and high passions that threatened to make the "Aroostook War" something more than a Gilbert and Sullivan comedy, earning for himself Channing's tribute of "Pacificator and Friend of Mankind." Intrusted with the task of conducting the Cherokees of the Southwest to their new homes in Indian Territory, he gained their friendship and their confidence, and once more emphasized his chosen role of pacificator. Deprived at first of an active part in the Mexican War, he was sent eventually to conquer a peace from that unfortunate country, and proceeded to fight his way from Vera Cruz to Mexico City in a series of battles which revealed a mastery alike of tactics and of grand strategy and justified Wellington's

comment, "He is the greatest living soldier." Nominated at last to the Presidency, he was defeated by the incompetent Franklin Pierce, and thereafter confined himself to the organization of the Army and the improvement of the service. When secession came, in 1860, he was loyal to his national rather than to his state government, and contributed no little to the preliminary organization of the Union Army and the defense of Washington. A deep student of the science of war, his three-volume work on infantry tactics was studied by every young officer, but his contribution to the training of Army officers, North and South, was confined to this academic treatise. Lee, Grant, Sherman, McClellan, Beauregard, Jackson, Kearney, Bragg, Joe Johnston and Albert S. Johnston, to name only a few, served under him in the Mexican campaign, and learned from him much that they later used in the Civil War.

Mr. Smith's biography of Scott is a popular appreciation rather than a work of exhaustive scholarship. "I do not pretend," he writes, "to have said the last word about Scott. There is a rich field awaiting the exploration of the political or military expert." Mr. Smith has undertaken no such exploration, but confined himself rather to a racy narrative of events and a recreation of character. His narrative of events is interesting, well balanced, and reasonably accurate; his appreciation of Scott is discriminating, shrewd and impartial. Winfield Scott emerges from these sprightly pages an intelligible and likable figure: vain, officious, pompous, ponderous, ambitious, humorless, but of unimpeachable integrity, a high sense of honor and justice, courageous and audacious, faithful to his friends and loyal to his flag. He was not a subtle man; there were no dark places in his soul or deep contradictions in his character. He was a warrior and a student of war, but he did not love war nor prefer military to civil glory. He was an excellent administrator, not only in the Army, but among an alien people, and revealed a real talent for diplomacy. He was a stern disciplinarian, but his sternness was tempered with humanity and kindliness, and he was cherished by his soldiers and respected by his officers. He wanted to be President, and it was a harmless ambition, but he refused to compromise himself to further that ambition and he learned in time that his talent was not for politics. He was a good man, in the sense that R.E. Lee was a good man, and though he had none of Lee's devoutness, he had much the same moral standards.

CONTACT

BY

CHARLES CODMAN

Illustrated . . . 248 pp. . . . Little, Brown & Co., Boston

Contact is the first-person chronicle of an American airman's adventures during the World War; and on the dust-jacket there is the assurance by James Norman Hall, one of Charles Codman's companions, that "there is not a dull page in the book from beginning to end." That is absolutely accurate. And it shows exactly what kind of book this is. It is a gay and gallant record of adventure, full of good comradeship and a sporting spirit and laughter and quick wit. And although there is tragedy enough—most of Lieutenant Codman's squadron mates and associates were killed—the writer does not stress that aspect of his experience. These lads were young, brave, adventurous, high-spirited; and both their point of view and their adventures are most excellently set forth here.

Charles Codman, who already knew and loved France, was in the American Ambulance Field Service with the French Army from 1915 to 1917. When this country entered the war he went into the Air Service, and after his preliminary training he was assigned to the bombing-plane service and stationed at Clermont-Ferrand. From there he was moved to the front, and after a period of work in a fairly quiet sector he took part in the St. Mihiel offensive in September, 1918, was shot down and captured. He was cited by General Pershing "for distinguished and exceptional gallantry," and was awarded the Croix de Guerre avec Palme by Maréchal Pétain. With James Norman Hall and two other comrades he was in a German prison when the armistice was signed; and the story of how the four "escaped" brings the story of perilous adventures to a humorous close.

This is a high-spirited book; not insensitive, but lighthearted and young.

THE LAST OF THE GENTLEMEN'S WARS

BY

MAJOR GENERAL J.F.C. FULLER, C.B., C.M.G., D.S.O.

304 pp. . . . Faber and Faber, London

General Fuller states that his aim has been to make this book a straightforward account of what a very young subaltern

was called upon to do during the South African War, and how to the best of his abilities he did it. General Fuller has succeeded and the book can be read with great interest and considerable profit.

The author states: "This last of our great colonial wars was a gentlemanly undertaking; for, with few exceptions Briton and Boer fought cleanly." The war, he goes on to say, was treated by the British Army almost as a sporting adventure. This attitude led frequently to avoidable disaster and "perhaps prevented us from drawing the full profit from our experience." The moral drawn being that if "our aim is to beat our opponents rapidly, not only must we place soldiership before sportsmanship, but we must radically change what we are pleased to call the public school spirit, which by canonizing the athlete and the sportsmen dumps upon the world the youths of the upper middle classes not humbly but arrogantly ignorant of almost everything necessary to qualify them to take their proper place in the community. Today we want quality, but the thinking and educated quality. Yet do not let us forget that chivalry in war is almost as important as killing, because on the cleanness with which a war is fought will depend the cleanness of the place which one day must follow it."

General Fuller rarely restrains himself from drawing lessons, always forceably expressed, from experience, and his readers are the better for it. In this book he has restrained himself and the text is exactly what he set out to make it, a most interesting and often most amusing narrative.

IF WAR COMES

BY

MAJOR R. ERNEST DUPUY, U.S. ARMY

AND

LATE MAJOR GEORGE F. ELIOT, U.S. ARMY

369 pp. . . . The Macmillan Company, New York

Here, for the first time, is set down what future wars will mean to the war-frightened public. It is obvious that the European and Asiatic military situation today can be weighed impartially and objectively from the American viewpoint only. This

book offers such a critical analysis and proves that it is not necessary for the American public to look to foreign "military critics" for a sound discussion of the subject. In this book the authors forecast conditions in the next war and answer questions which are being asked by every man and woman who faces the future with a realization of the possibilities and probabilities of war.

There have been economic, political and diplomatic surveys of the world situation. Here is a *military* estimate of the forces now stirring in war-clouded Europe, and battle-torn China.

Is the Spanish Revolution a rehearsal for the next world War? What lessons does it teach about air power, antiaircraft equipment, tanks, gas? What of new and fearsome weapons the threat of which has been held over our heads?

This book takes the reader over the battlefields of the past, touches, in historical examples, on the immutable principles of war, the trends of military belief today, briefly summarizes the armies and navies of the world, and, in a series of keen, analytical estimates, describes what soldiers believe must be the initial moves of any major hostility. These estimates are based not upon chimerical dreams, but upon the military and naval means at hand today.

The authors make no attempt at prophecy; however, they do come to certain conclusions with regard to the possible world-scope of future war—conclusions of particular interest to American readers. In this book you are transported in spirit to the secret council-rooms of the European and Asiatic general staffs, where pros and cons of military policy are being weighed in the light of the objectives imposed by their respective governments. It will be read with equal interest by the professional soldier and the man in the street, who today—as never before—must be drawn into closer touch with hostilities "if war comes."

A HISTORY OF THE ART OF WAR IN THE SIXTEENTH CENTURY

BY

SIR CHARLES OMAN

With thirty-three maps and twelve plates . . . 783 pp. . . . E.P. Dutton & Co., New York

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Americans will find that here is history as history is written in England. Sir Charles Oman begins with source material.

But he does not merely report it. He discharges a judicial function and announces what, amid uncertainties, emerges—so he concludes—as the truth of what happened. It is history that insists on being decisive. It does not merely discuss. It says things.

By a previous volume descriptive of war in the Middle Ages, Professor Oman enhanced an already established reputation. He now describes the transitional conflicts of the sixteenth century. An era of reformation, world-wide discovery and literature is shown to have been also a period when, to the horror of Shakespeare, the inhumanities of gun-powder were the tolerated prelude to belligerency as we know it today. The Europe that Mr. Eden is trying to hold in leash was evolving its inner emotions.

It is in no cultural sense that Professor Oman alludes to "the art of war." With the inlaying of armor, the embossing of cannon, the embroidery of pennants and the pageantry of military display he is not concerned. Weapons and munitions are only considered to be of significance in so far as they are organized for use. It is assumed that wars were waged not to be admired but to be won.

To some the campaigns thus carefully reconstructed will seem to be no more interesting than post-dated war correspondence from Spain or China. Why worry in these days over battles and sieges that it requires a Sir Charles Oman to rescue from near-oblivion? The answer is that each battle and siege is selected as an example of instructive strategy and tactics.

RAW MATERIALS OR WAR MATERIALS?

BY

ALFRED PLUMMER

144 pp. . . . Victor Gollancz, Ltd., London

Dr. Plummer makes a vigorous and well-argued contribution to the current controversy about colonial claims and raw materials. At bottom, he holds, the question is one of peace and war. There are few difficulties in the way of the dissatisfied Powers—Germany, Italy and Japan—meeting their legitimate peace-time requirements in raw materials, and such difficulties as exist are due in part to their own action—in Germany's case,

for example, in reserving so much of her available foreign exchange for the purchase of raw materials required for her enormous rearmament. Dr. Plummer makes a detailed examination of the activities of international cartels, one result of which is to show that both Germany and Italy have readily taken their part in restricting supplies and raising prices. Nor would the return of her colonies solve Germany's population problem—if, indeed, there is any such problem. Before the War only a few thousand Germans settled in the African colonies, and there is little likelihood that any more would go there if the colonies were restored to German sovereignty.

Dr. Plummer's general conclusion is that the dissatisfied Powers are definitely war-minded, and that the demand for colonies arises from the desire to exploit them for war purposes. He regards it as a good thing that the sources of raw materials are so largely in the control of the more peace-loving nations, and, failing German and Italian cooperation in a policy of collective security, disarmament, and a strengthened League of Nations, he would have them remain there. If such cooperation were forthcoming, which he regards as highly improbable, he would like to see a new internationalism taking the place of the old imperialisms under which all non-self-governing colonial possessions would be held under an improved League mandates system, native rights respected, and the Open Door upheld.

THE PRIVATE MANUFACTURE OF ARMAMENTS

BY

PHILIP NOEL-BAKER

560 pp. . . . Oxford University Press, New York

Viscount Cecil says in his preface to this book: "At a time when every decent citizen should be striving to his utmost to maintain peace there exists a great industry with branches in every country and having a capital running into hundreds of millions of pounds whose interest it is to promote war." Figures compiled by the United States War Department tell us that the forces mobilized on both sides in the World War numbered 65,038,810 and that the casualties were: 8,538,315 killed and dead of wounds and disease and 21,219,452 wounded. The world shudders today in the shadow of what might be an even

greater conflict. All the nations of Europe are piling up armaments in preparation for it. In Asia, Japan, Russia and China are amassing war material. A naval race is on, the limitations of the past fifteen years no longer being a restraint. While the United States is more concerned to shape a neutrality law that should keep it out of war, nevertheless, it is planning to expand the fleet and is increasing the army budget.

Professor Noel-Baker's study of the private manufacture of armaments has covered a period of ten years. Its fearful revelations may give pause at this late day to the statesmen and military leaders of Europe who fear war is unavoidable or who would hasten it to gain territory and dictate reparations. That makers of munitions, that is to say the executives of companies engaged in the business, have an interest in promoting war and in the past have proved it by their confidential statements to heads of governments and by selling munitions to potential enemies, Professor Baker makes clear to his readers in a book as temperate as it is logical.

THE SPANISH PLOT

BY

E.N. DZELEPY

157 pp. . . . P.S. King & Sons, London

The Spanish Plot is planned to be a warning. The Fascist Powers (runs the argument) are bent on increasing their strength at the expense of Spain and ultimately of Europe; and (it is added) the democratic Powers by their timidity are aiding them:

> The misfortune is that the "National" Government of Great Britain suffers from an anti-Bolshevist mania, and openly shows its sympathies for all Fascist countries and secretly encourages their plans for an anti-Soviet crusade. . . . And yet Great Britain cannot be ignorant of what is really at stake in the struggle between "the two Spains."

The main thesis is supported by a wealth of diplomatic correspondence.

SINGLE TO SPAIN

BY

KEITH SCOTT WATSON

Illustrated with photographs . . . 264 pp. . . . E.P. Dutton & Co., New York

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For a book dealing with the hardships and horrors of the Spanish civil war, *Single to Spain* has a measure of sprightliness that is surprising. It is the spirit of Tommy Atkins come to life again in circumstances and surroundings different from those of the great war.

Mr. Watson went to Spain as a volunteer for the Loyalist forces and he ended his Spanish experiences as a journalist in the service of the English press.

It was an odd enough company that he joined. Its leader was one Nat Levy, a Communist, and something of a despot; then there was Highlander Jock, with three years' training in the Black Watch behind him, very picturesque in his speech; Lorrimer Birch, "a Byronesque young men" for whom communism was the beginning and end of his existence, and who kept tabs on Levy, who did not possess the virtues of the orthodox Marxian; David Marshall, a Lancashire boy, who was something of a poet and had sickened of the sordid, petty officialdom of the municipal service—he used his leave and his savings to sail for Barcelona. Nothing united them and the others in the Tom Mann Centuria but their common English speech and their common hatred of fascism. When not in the barracks they are to be found in cafes, and there is a running chronicle of life and gossip behind the lines, if there is such a thing as "behind the lines" in this internecine war. Spanish food, Spanish music and Spanish customs form a part of the picture.

THE TRAGIC FALLACY— A STUDY OF AMERICA'S WAR POLICIES

BY

MAURITZ A. HALLGREN

474 pp. . . . Alfred A. Knopf, New York

Mr. Hallgren contends that the day the United States enters a war, an absolute dictatorship more rigid than any now

known to Europe will be set up to dictate our lives and thoughts.

Mr. Hallgren, relying upon official documents and statements which are not widely known, reports that our army and navy departments have prepared plans for the establishment of a military dictatorship covering all spheres of the national life: Industry, finance, newspapers, communications.

Mr. Hallgren writes also that the plan is ready for instant use. When Congress passes the bills the President will issue three proclamations setting up a dictatorship. With this authority the President may fix prices, rates and wages. Mr. Hallgren asserts: "These powers are absolute. They cover everything. They can be used to suppress any newspaper, printing press, publishing firm, or any other business or any individual in a position to influence or appeal to public opinion."

SURVEY OF INTERNATIONAL AFFAIRS, 1935

BY

ARNOLD J. TOYNBEE AND V.M. BOULTER

2 vols; 455 & 568 pp. . . . Oxford University Press, New York

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The "Survey" for 1935 has as its central theme the overwhelming effect of Germany's resurgence as a military power on the policies of the European chancelleries. From the collapse of the Disarmament Conference the narrative of volume I moves smoothly along to discuss the project for an Eastern European mutual assistance pact, conclusion of the Franco-Italian agreements of January, 1935, the restoration of conscription in Germany, its repercussions at Stresa and in Geneva, the Anglo-German naval agreement, and the proposed Western European air pact. We have here, in short, a chronicle of the European reaction to the Hitlerite stimulus.

In the second volume, subtitled "Abyssinia and Italy," the long shadow of Berlin is also seen to hover over the battlefields of Ethiopia and the halls of Geneva. It was in large part the German menace which prevented Paris and London from squarely facing the possibility of a League war in the Mediterranean; and by all the evidence Mussolini gave full weight to this factor in his calculations. The whole sorry tale is told in this volume, down to what was apparently the last appearance of an Ethiopian delegation at the League Assembly, in September, 1936. It is told with a fullness, an insight, and a balance

not likely to be surpassed until scholars have access to the archives.

TOWARDS ARMAGEDDON

BY

MAJOR GENERAL J.F.C. FULLER, C.B., C.M.G., D.S.O.

241 pp. . . . Lovat Dickson, London

In this book General Fuller lays before the British the problem of their defense policy. He describes the dangers which face them and gives his views as to how they should prepare to meet them and how best to organize the sea, land and air forces. Whether one agrees with his views or not, there can be no doubt that he puts his case well, although he makes many assertions that might call for criticism. For instance, when favorably comparing Fascist Germany and Italy with democratic Great Britain and France, he writes that if it should come to war, "It means that on one side (*i.e.*, Germany and Italy) we shall find heroism and the will to win and on the other cowardice and the desire to be defeated so as to get the ordeal over."

How does he arrive at this conclusion? Did the Italians show such outstanding heroism in Abyssinia? Have the democrats in Spain shown any less courage and determination than their Fascist foes? General Fuller seems to think that the City of London is to blame for all the shortcomings of the foreign policy and defense organization, and from his book he would appear to believe that every British Government since the War and all those responsible for the armed forces of England during the same period have been, and are, incompetent. Apparently he feels Fascism is the only cure for the British. It is certainly a book to read, but it might be more convincing if its author had not been so dogmatic in his writing.

THE WAR OFFICE AT WAR

BY

SIR SAM FAY

288 pp. . . . Hutchinson & Co., London

This is a lively, outspoken book dealing with the author's experiences when the War summoned him to exchange his chair-

manship of the Great Central Railway for the post of Director of Movements in the War Office. He later rose to be Director-General of the Movements and Railways and a member of the Army Council, and it is interesting to note that in his disputes which raged throughout 1917 and 1918 between the military and the civil authorities responsible for the conduct of the war he was wholeheartedly on the side of the soldiers. Sir Sam Fay liked and admired soldiers because they were required to do things rather than talk about them. He was not very fond of intriguers of whom he has many hard and sometimes unjust things to say. The book should be of interest to a wide circle of readers to whom it will give a glimpse of a phase of war history little known to the army or the public.

THE FRENCH WAR MACHINE

BY

SHELBY CULLOM DAVIS

221 pp. . . . Georg Allen & Unwin, Ltd., London

The title of this work is something of a misnomer in that—as the publishers state—it "is not primarily a military study; rather it is a political book dealing more particularly with that military aspect of politics which is too often forgotten." It is none the worse for that, however, and should be of no less interest to the Services, for Mr. Davis has furnished what is both a summary and a survey of what is surely among the most influential factors in international affairs—that is the capacity of France to defend herself against her mighty neighbor beyond the Rhine.

The author examines the man-power problem and the efforts to solve it by an increase of the birth-rate, by altering the length of military service, and by calling on the resources of the colonies. He shows, too, how French policy, which since 1919 has been directed to maintaining the Treaty of Versailles, has been neither militant nor aggressive, but emphatically one of security. "It was so logical a policy that it ended by offending the great illogical majority."

The organization of the French Army is considered on very general terms, but there are chapters on colored troops, the Colonial Army, raw materials of war, and air and naval develop-

ments, emphasis being laid especially on recent progress in both the latter spheres. The statistics given are up-to-date.

THE REVOLUTION BETRAYED

BY

LEON TROTSKY

Faber and Faber, London

The views of this great revolutionary—for Trotsky showed qualities of greatness during the struggle which brought his party into power and in the subsequent consolidation of that power—cannot be neglected by the world; and none the less because those views are abhorrent to the world at large. It has been well said that this book is politically more important than anything Mazzini ever wrote.

There is some confusion in the public mind as to the issues between Trotsky and the existing Government of Russia, and, incidentally, it may be noted that the quarrel is not without elements of a long-dated personal hostility between the former and Stalin. But there is no mention of this last in the indictment here set forth, and the author takes his stand firmly on the ground indicated in his title. Briefly, his charge lies in the divergence from the principles of the original revolution—the principles enunciated by Karl Marx and adhered to by Lenin, who, were he alive, "would probably already be in prison."

Now, the pure Bolshevist gospel involved two main dogmas. The first lay in the dissolving of the State, "the guardian of inequality," into a self-governing society in which the functions hitherto carried out by a bureaucracy would become so simplified as to be within the competence of any or every citizen, and the second in the fomentation of world revolution aiming at organizing humanity on similar and wholly international lines. The rejection of these cardinal tenets has, it is claimed, only brought the "toilers" to exchange one chain for another.

That the Russian people live under a despotism as severe as any in history is the testimony of countless—and by no means always prejudiced—witnesses, although the recently-promulgated Constitution would seem to indicate some alleviation. But what are Trotsky's panaceas? From such a doctrinaire they can only lie in a return to the "first careless rap-

ture" of Bolshevism. He savagely attacks the "unheard-of apparatus of compulsion" in the existing bureaucracy which has generated the heresies which he duly elaborates—social and financial inequalities, "the birth of a privileged officers' class crowned with marshals," a strengthening of parental authority in the family, and a change of policy in the matter of religion.

CAVALRY COMBAT

512 pp. . . . U.S. Cavalry Association, Washington, D.C.

A compilation of the action of small cavalry units during the World War. . . . Planned and initiated by the Chief of Cavalry. . . . Prepared under the supervision of the Assistant Commandant, the Cavalry School. . . . Full of battlefield experience and tactical instruction. The greatest field for study of cavalry action during the World War ever compiled. . . . Invaluable for officers of all components of the cavalry arm. . . . Narratives are followed by appropriate discussions of the correct interpretation of tactical principles. Each action is taken from a reliable source and is accompanied by a sketch. Many examples show the proper employment of troops and many depict incorrect solutions. . . . Covers attack, defense, counterattack, reconnaissance, counterreconnaissance, advance guards, rear guards, flank guards, outposts, withdrawal, retirement, delaying action, pursuit, filling a gap, mobile reserve, attack of a river line, supply, marches and evacuation of men and animals. Also an introductory chapter on the evolution of cavalry and one showing the employment of larger cavalry forces during the World War.

CHEMICALS IN WAR
(A Treatise on Chemical Warfare)
BY
LIEUTENANT COLONEL AUGUSTIN M. PRENTISS
AND
MAJOR GEORGE J.B. FISHER
739 pp. . . . 167 illustrations . . . McGraw-Hill, New York

This book covers its subjects in five major divisions, the first four of which constitute a complete technical exposition of

chemical warfare, its fundamentals, the various chemical agents, what their effects are, how they are projected, tactics and technique of chemical combat for the several arms, defensive means and methods, etc.

The fifth division presents both factual and analytical material relating to the effectiveness of chemical warfare, both from technical and humanitarian standpoints, the international situation, and other considerations that affect the picture of the probable place of chemical combat in future war.

While descriptive material is presented in essentially clear and non-technical form which may be understood by all, supporting data make the book a complete manual for the military or chemical technicist.

Part III traces the evolution and development of use of chemicals in battle from the early World War period to the present day.

Special attention is paid to post war advances in the field of chemical warfare in so far as public disclosure is possible, and the treatment of the tactical use of chemicals is more complete than that appearing in any other work at the time of publication.

LIBRARY BULLETIN

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Bienstock, Gregory.—**The struggle for the Pacific.** 1937 [M 950]

Blythe, Legette.—**Marshal Ney: A dual life.** 1937 [M 94405-E4-C.44-B92 (NE)]

Bolitho, Hector.—**King Edward VIII: an intimate biography.** 1937 [942-B92 (ED)]

Boyanus, S.K. & Myuller, V.K.—**Russko-Angliiskii Slovar'.** [Russian-English dictionary.] 1931 [491.7]

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Codman, Charles.—**Contact.** 1937 [M 9403-B4.73]

Command & General Staff School:

Command and General Staff School Extension Course, 1937-1938. (2 volumes) 1937 [M 209-C.73-D4E-8E5]

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Congress.—**Official Congressional Directory for the use of the United States Congress, 75th Congress, 1st Session, beginning January 5, 1937.** 1937 [328.736]

Court of Claims.—**Cases decided in the Court of Claims of the United States, April 6, 1936 to December 6, 1936.** Vol. LXXXIII. 1937 [345.41]

Cox, Geoffrey.—**Defence of Madrid.** 1937 [M 946-A]

Davis, Shelby C.—**The French war machine.** 1937 [M 103-C.44]

Dumoncel, Chef d'Escadron Léon.—**Essai de memento tactique.** La décision, Le Chef—La Décision—La manoeuvre. [Tactical handbook. The decision. The Commander—The decision—The maneuver.] 1937 [M 505-F1.44]

Dunlap, Orrin E.—**Marconi: The man and his wireless.** 1937 [945-B92 (MA)]

Dupuy, Major R. Ernest & Eliot, Major George.—**If War comes.** 1937 [M 003-A]

Dzelephy, E.N.—**The Spanish plot.** (Translated by Edward Fitzgerald and Frank Budgen) 1937 [M 946-A]

Encyclopedia of Canada. Vol. V: Newts—Siksika. 1937 [971]

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Franck, Harry A.—**Roaming in Hawaii.** A narrative of months of wandering among the glamorous islands that may become our 49th state. 1937 [996.9]

Franke, Generalmajor Hermann.—**Handbuch der neuzeitlichen Wehrwissenschaften.** Zweiter Band: Das Heer. [Handbook of modern military science. Vol. II: The Army.] 1937 [M 104-B12]

Fuller, Major-General J.F.C.:

The last of the gentlemen's wars. A subaltern's journal of the War in South Africa, 1899-1902. 1937 [M 96825-E3-C.42]

Towards Armageddon. The defence problem and its solution. 1937 [M 103-C.42-A]

Giono, Jean.—**The song of the world.** (Translated by Henri Fluchere and Geoffrey Myers) 1937 [843.91]

Golovine, Lieut. General N.N.—**Air strategy.** 1936 [M 409-J1-A.42]

Gordon, Alban.—**Russian Civil War.** A sketch for a history. 1937 [M 9403-C1-D.47-R]

Gordon, Caroline.—**None shall look back.** 1937 [M 9737-B3-F.75]

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Military operations, France and Belgium, 1918. March-April: Continuation of the German offensive. Vol. II (Text and Maps). 1937 (History of the Great War based on official documents). [M 9403-E4-D.42-C]

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Hallgren, Mauritz A.—**The tragic fallacy: A study of America's war policies.** 1937 [M 973-A]

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Ishimaru, Lt. Comdr. Tota.—**The next world war.** (Translated by B. Matsukawa) 1937 [M 003-A]

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Keyes, Frances Parkinson.—**Capital kaleidoscope.** 1937 [973-B920]

Lehmann, Captain Ernst A. and Adelt, Leonhard.—**Zeppelin: The story of lighter-than-air craft.** (Translated by Jay Dratler) 1937 [M 409-C.43]

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Marriott, Sir John.—**Makers of Modern Italy: Napoleon—Mussolini.** 1937 [M 954-A]

McNeill-Moss, Major Geoffrey.—**The siege of Alcazar.** A history of the siege of the Toledo Alcazar, 1936. 1937 [M 946-A]

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Neave, Lady Dorinda L.—**Remembering Kut—"Lest we forget."** 1937 [M 9403-J.55-M]

New International Year Book. A compendium of the world's progress for the year 1936. 1937 [031]

New York Historical Society.—**The letters and papers of Cadwallader Colden.** (Collections, 1934 and 1935). 1937 [974.7-B92 (CO)]

Noel-Baker, Philip.—**The private manufacture of armaments.** 1937 [M 614-A5]

Oman, Sir Charles.—**History of the art of war in the Sixteenth Century.** 1937 [M 501-A.42]

Plummer, Alfred.—**Raw materials, or war materials?** 1937 [M 009-D1]

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Rowan, Richard W.—**The story of secret service.** 1937 [M 505-E4]

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Rutherford, Colonel N.J.C.—**Soldiering with a stethoscope.** 1937 [M 942-B92 (RU)]

Smith, Arthur D.H.—**Old fuss and feathers.** The life and exploits of Lieutenant General Winfield Scott. 1937 [M 973-B92 (SC)]

Spaulding, Colonel Oliver L.—**The United States Army in war and peace.** 1937 [M 203-C.73-C]

Statesman's Yearbook 1937. Statistical and historical annual of the states of the world for the year 1937. 1937 [310]

Streeter, Floyd B.—**Prairie trails and cow towns.** 1936 [978]

Temple, Sarah Blackwell G.—**The first hundred years.** A short history of Cobb County, in Georgia. 1935 [975.8]

Toynbee, Arnold J.—**Survey of international affairs, 1935.** (2 volumes) 1937 [94-B]

Trotzky, Leon.—**Lenin.** 1925 [947-B92 (LE)]

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Warner, Louis H.—**Mexico's progress demands its price.** 1936 [972]

Watson, Keith Scott.—**Single to Spain.** 1937 [M 946-A]

Wellesley, Muriel.—**The man Wellington.** Through the eyes of those who knew him. 1937 [M 942-B92 (WE)]

Who's Who in our American Government. 1937 [973-B920]

Wilgus, William J.—**The railway interrelations of the United States and Canada.** 1937 [385.73]

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TEXTBOOKS

The following books and pamphlets are used for instructional purposes at The Command and General Staff School and may be obtained from the Book Department:

Antiaircraft Defense, 1937
Antitank Defense, 1936
Attack, 1937
Check List for Staff Officers' Field Manual, 1935
Combat Orders, 1937
Command, Staff and Liaison, 1936
Command, Staff and Principles, 1937
Defense, 1937
Employment of Machine Guns, 1925
Employment of Tanks in Combat, 1925
Field Service Staff Manual, 1925
Infantry Howitzer Company, 1925
Manual for Commanders of Large Units, Volume II, 1936
Military Intelligence, 1937
Military Organization of the United States, 1928
Preparation and Conduct of Tactical Exercises (Tentative), 1937
Principles of Strategy, 1936
Psychology and Leadership, 1934
Reconnaissance, Security, Marches, Halts, 1937
Reference Data, 1937
Reference Data, Proposed Infantry Division, 1937
Signal Communication, 1937
Solution of Map Problems, 1925
Special Operations, 1937
Study Course in Military Art, Volume I, 1935
Study on Combat Intelligence, 1928
Supply, Evacuation and Logistics, 1937
Tables of Organization, 1936
Tables of Organization, Mechanized Division, 1937
Tables of Organization, Medical Department, 1937
Tables of Organization, Proposed Infantry Division, 1937
Tables of Organization, Quartermaster Corps, Corps and Army, 1937
Tactical Employment of Air Corps, 1937
Tactical Employment of Antiaircraft Artillery, 1937
Tactical Employment of Cavalry, 1937
Tactical Employment of Engineers, 1937
Tactical Employment of Field Artillery, 1936 and Changes No. 1
Tactical Employment of Infantry, 1937
Tactical Employment of Mechanized Division, 1937
Tactical Employment of Quartermaster Corps, 1937
Tactics and Technique of Air Corps, 1936 (five chapters)
Tactics and Technique of Chemical Warfare, 1935
Tactics and Technique of Field Artillery, 1927
Tactics and Technique of Infantry, 1936 and Changes No. 1
Tactics and Technique of Medical Service, 1928
Terrain, 1937
Cannae—von Schlieffen—Text and Maps, Revised edition
Marne Campaign, 1914—von Kuhl

THE COMMAND AND GENERAL STAFF SCHOOL

Fort Leavenworth, Kansas
1936-1937

Map Problem No. 15

7 December, 1936

CANNAE—MILITARY HISTORY—STRATEGY

	Paragraph
SECTION I.—Requirement	1
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III.—Comments on Solutions	3

SECTION I

Requirement

	Paragraph
Requirement	1

1. REQUIREMENT.—Complete the following form:

EXAMINATION BASED ON
THE CONFERENCES ON "CANNAE"

1. INTRODUCTION.—Check one answer in each case, which you think the most applicable:

a. "Cannae" is:

(1) ( ) An accurate textbook on military history.
(2) ( ) To the army officer, what "Blackstone is for a lawyer"—that is a series of precedents to be followed.
(3) ( ) An "inspirational text" on the doctrines taught at this school.
(4) ( ) The presentation of the comments of a great military mind on selected chapters of the world's military history.
(5) ( ) A compendium of outstanding battles during history.

b. The "Cannae Doctrine" is essentially:

(1) ( ) The superiority of maneuver over mass.
(2) ( ) The effectiveness of the double envelopment.

(3) ( ) The annihilation of the enemy by an envelopment, which defeats the enemy at the decisive point.

(4) ( ) The importance of prompt and relentless pursuit.

(5) ( ) Great risks must be taken to gain great victories.

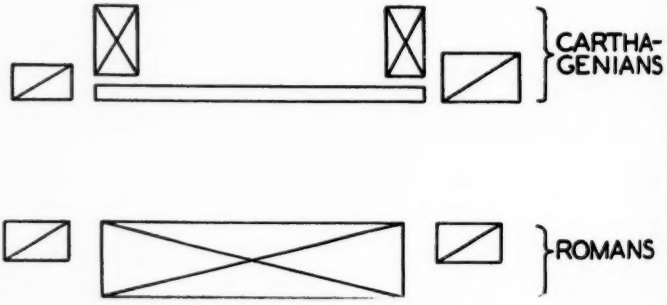
2. THE BATTLE OF CANNAE.

Indicate on the diagram below:

In red pencil, the scheme of maneuver of the Roman commander.

In blue pencil, the scheme of maneuver of Hannibal.

In dotted blue line, the progress of Hannibal's main attack.



3. NAPOLEON AND FREDERICK THE GREAT.

Answer the following questions, by filling in the blank spaces provided:

a. The morale effect of a surprise attack against the flank of even a victorious enemy is best illustrated in the battle of.....

b. (1) What reasons does Schlieffen give for Napoleon's failure to annihilate the Austrians during the campaign of Regensburg? Answer:.....

.....

.....

.....

(2) What was the real reason? Answer:.....

.....

c. What, in general, was Napoleon's scheme of maneuver at Austerlitz, expressed in current tactical terms? Answer:.....

.....

Why was this scheme successful? Answer:.....

.....

d. Too great an emphasis on security measures by Napoleon, leaving inadequate forces for the attack, characterized the battle of.....

e. Napoleon violated the principle that the holding attack should be reduced to the minimum consistent with results required by the situation, in the battle of.....

.....and the campaign of.....

.....

4. THE WAR BETWEEN PRUSSIA AND HANOVER.

Using red pencil for Hanover, and blue pencil for Prussia, indicate on the sketch below how Moltke planned another Cannae against the Hanoverians:

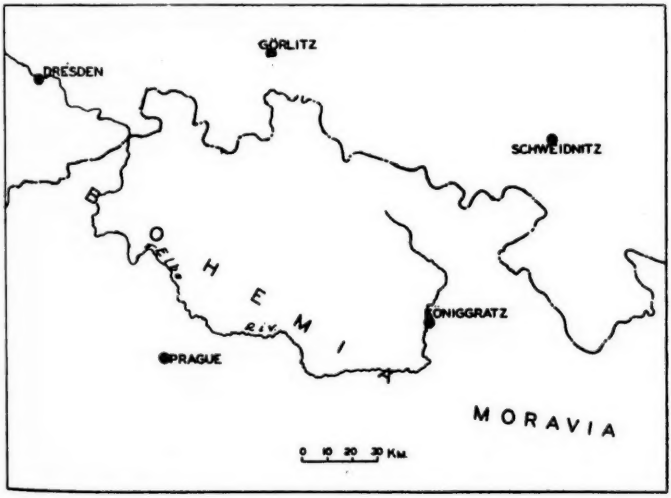
5. THE AUSTRO-PRUSSIAN WAR OF 1866.

a. Check with a blue pencil the countries allied with Prussia. Check with a red pencil the countries allied with Austria. With a black pencil cross out neutral countries.

Bavaria	Hesse-Nassau
Hanover	Italy
Denmark	Hungary
Wurttemberg	Baden
Hesse-Cassel	Saxony
France	England
Hesse-Darmstadt	Russia

b. Indicate in blue pencil on the sketch below the scheme of maneuver planned by Moltke, giving the designation of the Prussian armies concerned.

c. Indicate in red pencil on the sketch below the concentration area of the Austrian army, and Benedek's scheme of maneuver:



d. According to von Schlieffen, how can a commander defeat one enemy while another is threatening flank and rear?.....

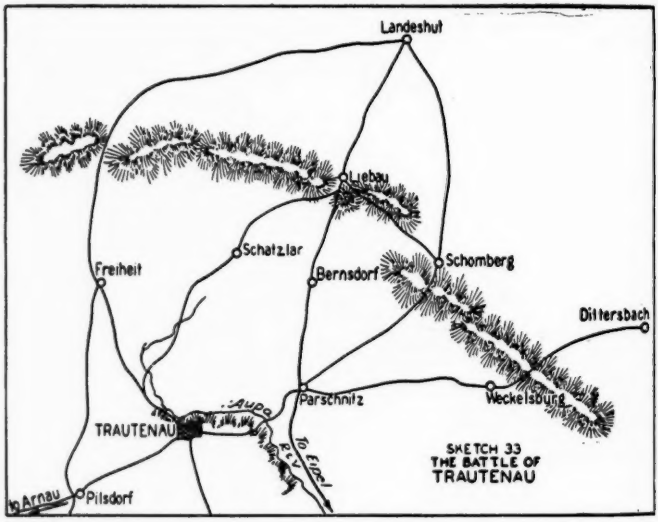
.....

6. THE FINAL BATTLES OF THE AUSTRO-PRUSSIAN WAR.

a. Trautenau.

Indicate on the sketch below, in blue pencil, how von Schlieffen would have directed the German I Corps (consisting of the 1st and 2d Divisions) from Landeshut to Trautenau, knowing that the 1st Guard Division of the corps on the left would advance via Dittersbach-Weckelsburg, on Parschnitz.

b. In red pencil indicate what actually happened.



c. Könniggrätz.

Was Königgrätz a Cannae? (Yes or no).....

What criticism does Schlieffen make of the Prussian strategy of the battle of Königgrätz?.....

.....

.....

.....

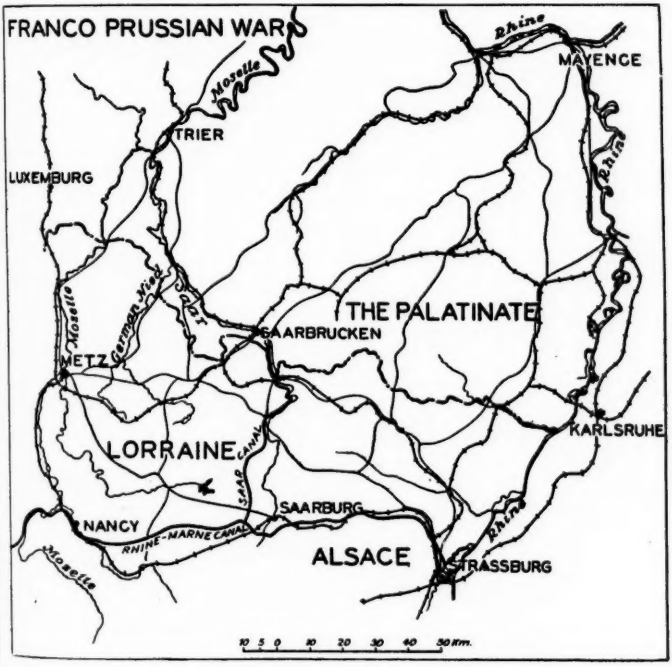
.....

Check below the tactical formation in which Königgrätz (considering the battle as a whole) should be classified.

( ) Wide envelopment
( ) Close-in envelopment
( ) Frontal attack
( ) Penetration
( ) Encirclement.

7. THE FRANCO-PRUSSIAN WAR. 1870-1871.

a. On the sketch below indicate in blue arrows Moltke's scheme of maneuver for a Cannae in 1870. In red indicate the location where Moltke anticipated the French would be found.



b. The Prussian victories of Weissenburg, Woerth, and Spichern were all achieved by the flanking action of units "marching towards the thunder of cannon."

Check the answer you believed to be Schlieffen's comment on this:

(1) ( ) It delays the advance unnecessarily.

(2) ( ) A splendid example of Prussian initiative.
(3) ( ) Only by such cooperation can frontal attacks be converted to envelopments.
(4) ( ) It facilitates the general forward movement.

c. What principal factors, according to Schlieffen, led to the unfavorable situation of the Germans just prior to the battle of Mars le Tour? Check the *three* principal factors.

(1) ( ) Premature pursuit.
(2) ( ) Lack of coordination.
(3) ( ) Misinterpretation of intelligence.
(4) ( ) Failure to use the cavalry properly.
(5) ( ) Failure to believe their cavalry reconnaissance reports.
(6) ( ) Contempt for the French.
(7) ( ) Too much initiative on the part of the German corps commanders.

d. Was the battle of Sedan a Cannae? (Yes or no).....

8. GENERAL QUESTIONS.

Write not more than sixty words on each of the following questions:

a. What is Count von Schlieffen's general criticism of frontal attacks?

b. According to General von Schlieffen, what is the only method by which a decisive victory is possible?

c. If units are in multiple columns, and one combat team strikes the enemy, what does Schlieffen say should be the action of neighboring combat teams?

d. Is pursuit more efficient if the victors take time to recuperate and coordinate, according to Schlieffen?

e. When Schlieffen says: "Be stronger at the decisive point!" what does he mean? Is such a doctrine in accord with our concept of modern warfare?

SECTION II

A Solution

Paragraph
A Solution 2

---

2. A SOLUTION.

1. *a.* "Cannae" is the presentation of the comments of a great military mind on selected chapters of the world's military history.

b. The "Cannae Doctrine" is essentially: "The annihilation of the enemy by an envelopment, which defeats the enemy at the decisive point."

2. See Sketch 1, page 2, "Cannae."

3. *a.* The morale effect of a surprise attack against the flank of even a victorious enemy is best illustrated in the battle of Marengo.

b. (1) Schlieffen says that Napoleon rejected the simple expedient of a concentric advance. He wished to adhere to the tried method of assembling his entire army in the rear or on the flank of the enemy. (Lines 26-29, inclusive, page 36.)

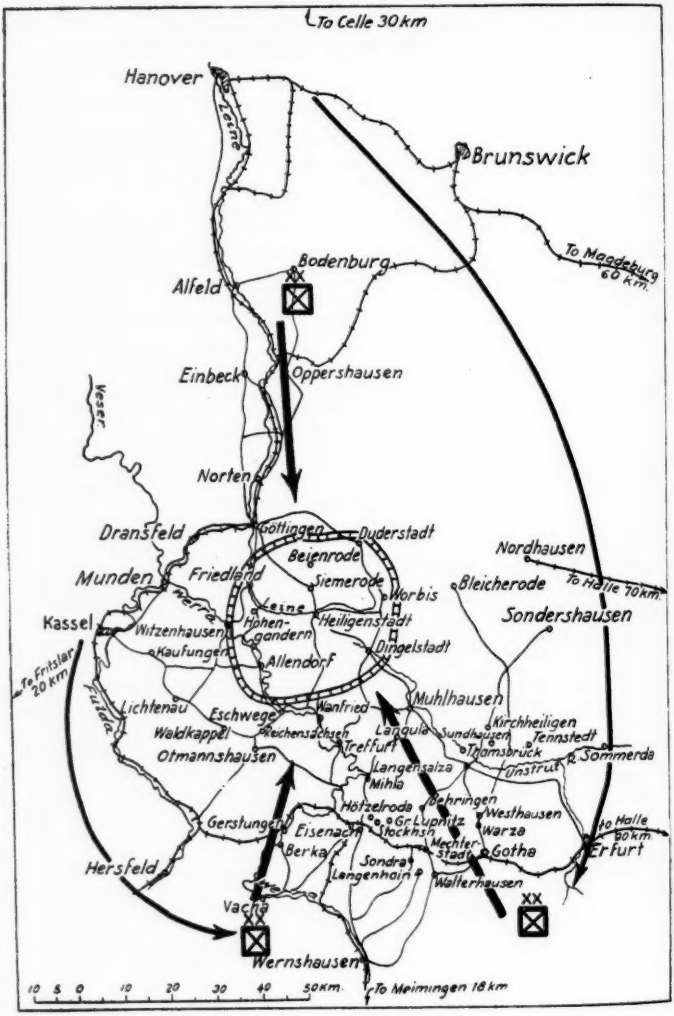
(2) The real reason was that Napoleon lacked confidence in his subordinates in any maneuver calling for a dispersion of his army.

c. Napoleon's scheme of maneuver at Austerlitz, was in current terms, a penetration. It was successful, because it was unexpected by his enemies.

d. Too great an emphasis on security measures by Napoleon, leaving inadequate forces for the attack, characterized the battle of Prussian Eylau. (Lines 2-8, inclusive, page 27.)

e. Napoleon violated the principle that the holding attack should be reduced to the minimum consistent with results required by the situation, in the battle of Jena and the campaign of Waterloo. (Lines 2-8, inclusive, page 20, and pages 51-52.)

4. *The war between Prussia and Hanover.*



5. *The Austro-Prussian War of 1866.—a.* The opposing forces were:

Prussia and Italy

vs.

Austria, Hungary, Bavaria, Hanover, Wurttemberg, Baden, Saxony, Hesse-Cassel, Hesse-Darmstadt, and Hesse-Nassau.

The following, of the countries listed, were neutral: France, England, Denmark, and Russia.

b. See Sketch 31, page 86, "Cannae."

c. Benedek planned the concentration of his army in Moravia. His scheme of maneuver was a main attack against the Prussian First Army, and a holding attack against the Prussian Second Army.

d. "One must not permit them to come within supporting distance." (Lines 4-6, page 91, "Cannae.")

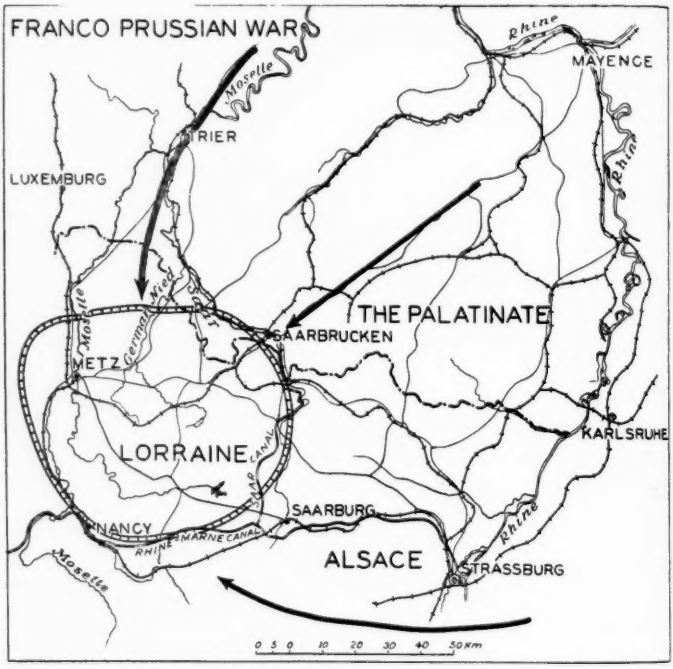
6. *The Final Battles of the Austro-Prussian War.—a* and *b.* Trautenau. See pages 94 and 95, "Cannae."

c. Königgrätz was not a Cannae.

Schlieffen's criticism of the Prussian strategy of the battle of Königgrätz was that they failed to keep the Second Army on the east bank of the Elbe, thereby missing an opportunity to cut off the Austrian retreat. (Lines 14 and 15, page 116.)

Königgrätz should be classified tactically as either a frontal attack or a close-in envelopment.

7. *The Franco-Prussian War of 1870.—a.*



b. Whenever units "march to the thunder of cannon," instead of continuing on their march objective, it delays their advance unnecessarily.

c. The three principal factors which led to the situation of Mars la Tour were: premature pursuit, misinterpretation of intelligence, and failure to believe their cavalry reconnaissance reports.

d. The battle of Sedan was a Cannae.

8. *a.* Schlieffen says that frontal attacks are costly in men, rarely successful against modern fire-power, and even if they gain ground do not result in a decisive victory; they merely drive the enemy to another terrain feature where he again must be attacked. (Lines 24-25, page 4; third paragraph, page 37; lines 9-15, page 56; pages 199-200; second paragraph, page 239; etc.)

b. A decisive victory is possible only when the rear or at least one flank of the enemy is made the objective of the attack. (Lines 26-27, page 4; last paragraph, page 11; lines 25-26, page 15; page 233; etc.)

c. If, during the advance in multiple columns, one combat team encounters the enemy, the neighboring columns should continue their advance, for by this scheme they can ultimately help the obstructed column much more effectively by attacking the enemy in flank and rear, than they can by changing direction and moving directly to the assistance of the attacked column. (Lines 24-30, page 148.)

d. Pursuit must be prompt and made regardless of fatigue. Decisive results can only be achieved if the enemy is not permitted to rally his troops and reorganize them. (Top of page 94; last paragraph, page 142; second and last paragraphs, page 156.)

e. He means that as one usually can not be strong everywhere, that temporary set backs at secondary fronts must be expected. They do not matter provided one is victorious at the decisive point. Such a doctrine is in accord with our concept of modern warfare; it is the essence of strategy as taught at this school.

THE COMMAND AND GENERAL STAFF SCHOOL

Fort Leavenworth, Kansas
1936-1937

Map Problem No. 24

19 January, 1937

THE DESIGNATION OF THE ESSENTIAL ELEMENTS OF ENEMY INFORMATION AND THE PREPARATION OF THE G-2 PLAN FOR THE PROCUREMENT OF NECESSARY INFORMATION BY ASSIGNMENT TO RECONNAISSANCE AGENCIES OF TASKS THAT ARE SUITED TO THEIR CAPABILITIES

	Paragraphs
SECTION I.—Situation and Requirement	1–3
II.—Situation, Continued, and Second Requirement	4–5
III.—A Solution	6
IV.—Discussion	7–11

SECTION I

Situation and Requirement

	Paragraph
General situation	1
Special situation (Blue)	2
First requirement	3

1. GENERAL SITUATION.—*a. Map.*—Special Map A, 1:62,500.

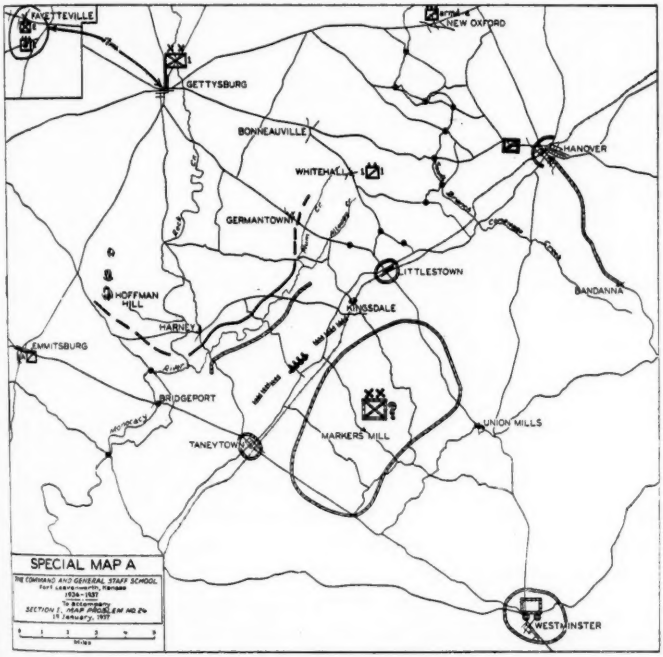
b. Main forces.—The Blue I Corps is concentrating in the area: Shippensburg — Chambersburg — Fayetteville. A Red force from overseas has occupied Baltimore. No other landings have been made. Red infantry regiments have only two battalions.

2. SPECIAL SITUATION (BLUE).—*a. Mission of the 1st Division.*—The 1st Division, reinforced, Major General A commanding, has the mission of covering the advance of the I Corps from its concentration area and of seizing the railroad facilities at Taneytown.

b. Advance of the 1st Division.—The reinforced 1st Division (less the 2d Brigade and the 2d Field Artillery) advanced from its concentration area in the vicinity of East Fayetteville (320-755) by secret night marches. It bivouacked in the vicinity of Gettysburg about 11:50 PM, 14 January, and resumed its advance toward Taneytown early 15 January. Soon after the march started Major General A received information that a Red force, estimated to be a reinforced division, which had arrived in Westminster by rail and marching on 14 January, was advancing

to the northwest in five columns from the region of Westminster.

c. Decision of division commander at 8:15 AM.—Major General A at 8:15 AM, 15 January, decided to defend at once with the main line of resistance generally along the north bank of Alloway Creek from the Monocacy River to Plum Creek (see Special Map A), prepared to assume the offensive after the concentration of the entire division.



The 1st Brigade was ordered to defend the position, prepared to extend to include Hoffman Hill on the west and along the west bank of Plum Creek on the east. The 2d Brigade and the 2d Field Artillery which were completing concentration near Fayetteville, were to be prepared to move by truck after 6:00 PM, 15 January. Sufficient trucks were available in Fayetteville for this movement.

d. Essential elements of enemy information.—The following essential elements of enemy information were announced following the decision of the division commander at 8:15 AM, 15 January:

(1) Will the Westminster Reds attack our position along Alloway Creek? If so: where, when and how? When will they have committed the bulk of their forces?

(2) Will the Westminster Reds assume the defensive anywhere northwest of the general line: Union Mills—Uniontown? What will be their dispositions?

(3) Will the Westminster Reds try to march around the 1st Division to block the passes north of Emmitsburg?

(4) Will additional Red forces advance from Baltimore so as to affect the 1st Division?

A G-2 Plan covering these essential elements was prepared and put into effect.

e. Situation at 11:00 PM, 15 January.—At 11:00 PM, 15 January, Major General A and his staff at the command post in Gettysburg are in possession of the following information:

(1) *I Corps.*—The I Corps will begin its advance on Baltimore the night 17-18 January on all available roads through the mountains north of Emmitsburg. Small detachments are guarding the eastern exits of all the passes which will be used. Corps air service is reconnoitering beyond the general line: Frederick —Mt. Airy—Westminster—Manchester—Red Lion—Columbia—Harrisburg.

(2) *1st Division (less detachments).*—The 1st Brigade has occupied its position. The 1st Squadron 1st Cavalry defeated weaker Red cavalry early in the day, drove it in on Red columns, and thereafter delayed the heads of the advancing Red columns. The squadron (less one-half troop) is protecting the left flank from the general vicinity of Whitehall (362-745), with small detachments on the general line: Ashgrove School (361-740)—crossroads 566 (366-743) extended north along the South Branch Conewago Creek as indicated on Special Map A. Armored cars are at New Oxford (366-754). One-half Troop A is protecting the left flank from the vicinity of Emmitsburg (340-734). It has detachments at the Monocacy crossings near and north of Bridgeport (349-731) and northwest of Keysville (347-726). The 101st Observation Squadron is observing from an airdrome near Fayetteville. A landing field has been established near Gettysburg. The balloon will be in ascension at daylight from a position north of crossroads 491 (353-742). Its primary mission will be to observe for the divisional artillery.

(3) The 2d Brigade and 2d Field Artillery having completed their concentration at Fayetteville are moving by trucks to

concealed locations in Gettysburg. The movement will be completed prior to daylight.

(4) *Red forces.*—After being delayed by Blue cavalry, leading elements of the Westminster Reds made contact with the position of the 1st Division along Alloway Creek. Late in the afternoon the bulk of the Red force was located as shown on Special Map A. Seven hostile batteries, including one of medium artillery, are known to have been in action during the afternoon. These are located as shown on Special Map A.

Red cavalry reinforced by infantry elements occupies Taneytown (355-729) and Littlestown (364-739), and has detachments observing the Monocacy crossings west of Taneytown and the region north of Littlestown.

No important movements of the Westminster Reds have been noted since dark. Trains and supply establishments appear to be located in Westminster.

Additional Red cavalry, advancing from the southeast, reached Midway (372-747) in the afternoon and is in contact with Blue cavalry detachments along South Branch Conewago Creek.

A truck column, transporting troops estimated as a brigade, and followed by truck-drawn artillery, which had been under Blue air observation for several hours, has just reached Hanover, where troops are detrucking.

f. Alteration of decision.—Major General A has announced that under the changed conditions, his plan is to defend the present position initially, passing to the offensive after the Reds have committed the major portion of their forces in an attack.

g. Weather, streams and railroads.—Weather is clear and cool. Forecast: no change. All streams on Special Map A except the Monocacy south of Toms Creek are easily fordable. The Monocacy River is fordable with difficulty south of Toms Creek. Demolitions have been effected on railroads leading north from Frederick near Yellow Springs and Harmony Grove. Demolitions also have been effected on the railways north of Baltimore near Cockeysville (407-710) and Loch Raven (418-700).

h. Air situation.—Blue combat aviation has materially restricted Red air activity. No Red combat aviation has been observed.

3. FIRST REQUIREMENT.—The essential elements of enemy information in effect at 11:00 PM, 15 January for the period: 11:00 PM, 15 January-8:00 AM. 16 January.

SECTION II

Situation, Continued, and Second Requirement

Paragraph
Situation, continued 4
Second requirement 5

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4. SITUATION, CONTINUED.—The essential elements of enemy information announced on the morning of 15 January were still in effect. The following additional essential elements also were in effect:

Will the Hanover Reds attack the 1st Division? If so, when and in what direction, and when will they have committed the bulk of their forces?

Will the Hanover Reds attempt to march around the 1st Division?

Will the Hanover Reds remain in the general vicinity of Hanover? If so, what will be their dispositions?

5. SECOND REQUIREMENT.—Prepare that portion of the G-2 Plan which will be effective for the period: 11:00 PM, 15 January-8:00 AM, 16 January, covering the following essential elements only:

a. Will the Westminster Reds assume the defensive anywhere northwest of the general line: Union Mills—Uniontown? What will be their dispositions?

b. Will additional Red forces advance from Baltimore so as to affect the 1st Division?

c. Will the Hanover Reds attack the 1st Division? If so, when and in what direction, and when will they have committed the bulk of their force?

SECTION III

A Solution

Paragraph
A solution to second requirement 6

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6. A SOLUTION TO SECOND REQUIREMENT.—For a solution to the second requirement, see following form for G-2 Plan.

INTELLIGENCE (G-2) PLAN

A SOLUTION TO SECOND REQUIREMENT:

Phases or Periods of the Operation	*Essential Elements of Enemy Information*	*Indications: (Analysis of Essential Elements of Enemy Information)*	*Reconnaissance Agency or Other Source*	*Specific Orders or Requests*	*Hour and Destination of Information* / *Remarks*
11:00 PM, 15 January to 8:00 AM, 16 January	Will the Westminster Reds assume the defensive anywhere northwest of the general line: Union Mills—Uniontown? What will be their dispositions?	Intrenching of a position	Division Air Service	(1) Observe the area: Bridgeport—Uniontown—Union Mills—Raubenstine—Littlestown for evidence of additional intrenching. Observe particularly the ridge between Piney and Alloway Creeks and the high ground southeast of the line: Taneytown—Kingsdale—Littlestown. Photograph above area soon after daylight. Photograph Longville and RJ 566 at 2:00 AM.	12:00 midnight and at two-hour intervals thereafter.
			Cavalry and 1st Brigade	(2) Report any evidence of any intrenching observed. Particular attention to ridge between Piney and Alloway Creeks.	When obtained to Div. CP.
		Location and echelonment in depth of artillery	Division Air Service	(3) Report location of all batteries observed. Keep located batteries under surveillance and report any change of position.	Same as 1.
			Artillery	(4) Report location of all batteries observed.	Same as 1.
		Hostile AA activity. Landing field and CPs.	Division Air Service	(5) Report area particularly protected by AA guns and location of any landing field or command post observed. Examine Markers Mill, Union Mills.	Same as 1.
		Location of reserves and tanks	Division Air Service	(6) Observe present bivouac area and report location of troop concentrations and tanks and any change in dispositions.	11:00 PM and hourly thereafter.

		Movements of supply vehicles and installations	Division Air Service	(7) Observe and follow movements of supply vehicles from Westminster, and observe installations there.	Same as 6.
		Demolitions or use of persistent gas	Division Air Service	(8) Report any demolitions noted. In particular have demolitions been effected at Monocacy crossings between Double Pipe Creek and Palmer; crossings over Big Pipe and Double Pipe Creek between Otterdale Mill and Monocacy, and crossings over Piney Creek southwest of Kingsdale?	Same as 1.
			1st Brigade and Cavalry	(9) Report any evidence of use of persistent gas in valleys of Monocacy and Alloway Creek or on east flank.	Same as 2.
		Attitude of forces in contact; extension of flanks	1st Brigade	(10) Report attitude of forces in contact. Send patrols around hostile flanks. Raid enemy position northwest of Oakgrove School about 2:00 AM for prisoners, and to determine strength of occupation.	12:00 midnight and at two-hour intervals thereafter.
	Will additional Red forces advance from Baltimore so as to affect the 1st Division?	Rail movements from Baltimore and entraining and detraining of troops	I Corps	(11) Report density of rail movement on lines: Baltimore—Frederick, Baltimore—Westminster, and Glyndon—Lineboro. Report any entraining of troops in Baltimore.	12:00 midnight and at two-hour intervals thereafter.
			Division Air Service	(12) Report density of rail movement on lines: Westminster—Keymar and Lineboro—Hanover and any detrainment of troops at Frederick, Westminster, Hanover, Union Bridge, or Keymar.	1:00 AM and 7:00 AM.

		Movement on roads from Baltimore region	I Corps	(13) Report strength, location, direction, and composition of movements on roads. Identifications requested.	Same as 11.
			Division Air Service	(14) Report direction, strength, location, and composition of movements on roads.	Same as 12.
		New troop concentrations	I Corps	(15) Report any new troop concentration in the area: Mount Airy—Baltimore—Red Lion. Identifications requested.	When observed to Div. CP.
			Division Air Service	(16) Report any troop concentrations near Woodsboro, Keymar, Libertytown, Westminster, Manchester, Spring Grove, Abbottstown.	Same as 12.
		Movement of trucks in Hanover	Division Air Service	(17) Report movement of trucks which transported Reds to Hanover.	12:00 midnight and hourly thereafter.
	Will the Hanover Reds attack the 1st Division? If so, when and in what direction, and when will they have committed the bulk of their force?	Movement of troops to southwest, west, northwest, or north	Cavalry	(18) Report any movement of Hanover Reds through New Oxford or west of South Branch Conewago Creek and north of the line: Littlestown—Midway. Follow progress of such movement. Beginning at daylight reconnoiter roads and report any hostile movement.	12:00 midnight and hourly thereafter to Div. CP.
			Division Air Service	(19) Observe roads and report strength, direction, composition, and location of hostile movements thereon. Follow movement of any column leaving roads, reporting location, strength, direction, and composition of force involved.	Same as 17.

		Attitude of hostile cavalry	Cavalry	(20) Report attitude of hostile cavalry, particularly any aggressive action on north flank.	Same as 18.
		Departure or disappearance of troops from Hanover and appearance of troop concentrations, tanks, and artillery elsewhere	Division Air Service	(21) Observe Hanover region for continued presence of troops. Report strength, location, and composition of any troop concentration or assembly of tanks, wherever observed. In particular keep artillery in Hanover under surveillance, follow any movements and report locations of all batteries observed.	Same as 17.

SECTION IV

Discussion

	Paragraph
Purpose	7
Essential elements of enemy information	8
Analysis of essential elements	9
Specific orders or requests	10
Instructions to agencies	11

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7. PURPOSE.—The purpose of this problem is to bring out the designation of the essential elements of enemy information and the preparation of the G-2 Plan for the procurement of necessary information by assignment to reconnaissance agencies of tasks that are suited to their capabilities.

8. ESSENTIAL ELEMENTS OF ENEMY INFORMATION.—*a.* The original essential elements, designated after the decision was made at 8:15 AM, 15 January, covered all activities of the Westminster Reds which interested the 1st Division, and in addition the question as to whether additional Red forces would advance from Baltimore. At 11:00 PM, 15 January these essential elements would remain in effect, since the capabilities of the Westminster Reds are unchanged, and still other Red forces (in addition to the Hanover Reds) may advance from Baltimore. However, the arrival of a Red force at Hanover radically changes the situation and it is desirable to designate new essential elements dealing with the possible activities of the Hanover Reds. Generally speaking, this force can remain in the vicinity of Hanover, attack the 1st Division, or attempt to march around it, and these three ideas should be contained in the new essential elements.

b. The wording of the essential elements is not important, provided all important ideas are included. In regard to an attack by the Hanover Reds the commander will desire to know when it will be launched, in what direction, and when the Reds will have committed the bulk of their forces. This last idea is important, since the Blue commander plans to attack when this has been done. In case the Hanover Reds remain near Hanover, it will be necessary to determine their dispositions and this idea should be included in the essential elements.

c. In general, it is desirable to group under one essential element, all possible lines of action by the enemy which would have the same reaction on the plan of the commander. Thus the essential elements will usually be few in number. It would

be possible, in the situation given, to draw up an entirely new set of essential elements, instead of merely adding new essential elements to those previously designated. By formulating an entirely new set of essential elements, the number of essential elements in effect at 11:00 PM, 15 January could be considerably reduced. However, such action would entail the formulation of an entire new G-2 Plan and would be a slow and useless procedure since the resulting missions in the end would be the same. On the other hand, the adding of new essential elements in such a situation simplifies the rapid determination of new missions for reconnaissance agencies. It is well to utilize as much as possible of an already prepared G-2 Plan. In this case, the adding of new essential elements would permit the determination of all necessary new missions within a few minutes.

d. One of the essential elements which was announced originally, dealt with the question of whether additional Red forces would advance from Baltimore. In many situations there will be a similar essential element dealing with the activity of distant or even unlocated enemy forces. It is impracticable to phrase such an essential element so that it will be applicable to such forces not only when they are distant or unlocated, but also after they have advanced to contact. In the latter case, new essential elements should be designated.

9. ANALYSIS OF ESSENTIAL ELEMENTS.—*a. Essential element dealing with the Westminster Reds.*—Of the three essential elements, with which the second requirement was concerned, the first dealt with whether the Westminster Reds would assume the defensive northwest of the line: Union Mills—Uniontown. The principal indications in such a case would be as follows: intrenching of a position, echelonment of artillery in depth, demolitions and use of persistent gas, together with the location of reserves and tanks. Other indications would be furnished by movement of hostile supply vehicles, enemy antiaircraft activity, the location of landing fields and command posts and the attitude of forces in contact. The enemy's air activity also might be listed as an indication.

b. Essential element dealing with Red movements from Baltimore.—The second essential element in the second requirement covered the possibility of additional troops being moved from Baltimore. Such troops might be moved by rail, so that density of rail movements, and entraining or detraining of troops should be listed as indications. Movement on the roads and appear-

ance of new troop concentrations would be other indications. Finally, the future disposition of the large number of trucks which moved the Red force to Hanover is of interest, as these trucks might easily be used to transport additional forces.

c. Essential element dealing with the Hanover Reds.—The third essential element dealt with the Hanover Reds. The indications of a possible attack by the Hanover Reds are: movement from Hanover toward the southwest, west, northwest, or north, the departure or disappearance from Hanover of the troops there at 11:00 PM, together with the appearance of troop concentrations and artillery closer to the 1st Division. The attitude of the hostile cavalry near Hanover also will furnish an indication.

10. SPECIFIC ORDERS OR REQUESTS.—*a. For the essential element dealing with the Westminster Reds.*—The division air service will be the principal agency which can determine whether the Westminster Reds are intrenching a position, although the cavalry and 1st Brigade can contribute information. The division air service should be directed to reconnoiter the entire area in question, but its attention should be particularly directed to the most probable locations for an enemy position, the Longville ridge and the high ground northeast of Taneytown. Photographing of the area soon after daylight on the morning of 16 January is desirable. Photographs of important localities may be made during the night but photographing of the entire area by night probably would not be remunerative. The division air service should be asked to report location of all batteries observed and directed to keep located batteries under surveillance. The division air service includes the balloon and the latter need not be treated as a separate agency. The air officer can divide missions between balloon and planes according to their capabilities. Since the artillery observers might spot some poorly-located hostile battery, the artillery also is an agency for ascertaining the location, and consequently, for determining the echelonment of the hostile artillery. It is particularly advisable to include the artillery as an agency for it is interested in counterbattery and the balloon has been given the primary mission of observing for the artillery. Including the artillery as an agency therefore diminishes the chances for any oversight in the reporting of battery locations.

The air service should be directed to watch the movements of supply vehicles and installations at Westminster, and it also

should keep under surveillance the area in which the bulk of the Westminster Reds are located. The location of concentrations and tanks and any change in dispositions should be reported. There would be no extensive movements on roads in case the Reds decided to defend in the area in which they are now located. The air service, in addition to reporting any demolitions noted, should be asked whether demolitions have been effected at crossings over the Monocacy, over Big Pipe, Double Pipe, and Piney Creek.

The 1st Brigade should be directed to report the attitude of hostile forces in contact and to send patrols around the hostile flanks as these may determine the location of any extensions of the flanks. The vicinity of Oakgrove School is particularly important. The strength with which the enemy holds the terrain in that vicinity, and particularly the orders given troops stationed there would be of the greatest interest to G-2. For this reason his plan calls for the 1st Brigade to make a raid in that vicinity about 2:00 AM for the purpose of obtaining prisoners.

b. For the essential element dealing with Red movements from Baltimore.—To determine whether additional troops are being moved from Baltimore, the I Corps should be asked to report density of traffic on all rail lines from Baltimore leading toward the north and northwest, and any entrainment of troops or any movement on roads leading from Baltimore toward the 1st Division. The strength, location, direction and composition of such movements should be requested. There should be no hesitancy in asking the I Corps to observe a large number of roads and to make frequent reports. It has several observation squadrons available for such reconnaissance and fulfilling the requests of the 1st Division is almost the sole occupation for these squadrons since the corps is not engaged. All main roads between the Baltimore-Frederick road and the Baltimore-Shrewsbury road must be observed, and it is desirable to include the roads leading from Baltimore to Red Lion. The division air service should be directed to complete this reconnaissance within the division air zone. However, until some evidence of movement has been reported by the I Corps, the division air service need not fly such missions frequently and it would be uneconomical to do so. One mission during the night and one soon after daylight would be sufficient. The division air service, however, should be directed to make frequent reports as to the movements

of the trucks which transported the Hanover Reds. Incidentally the appearance of these Reds at Hanover at 11:00 PM was not a surprise to G-2. The arrangements which have just been discussed had been in effect since early morning and as a result, early in the evening, the I Corps notified the 1st Division of the motor movement, and continued to follow its progress, at the request of the 1st Division. An air mission of the 1st Division picked it up as it approached the division air zone.

c. For the essential element dealing with the Hanover Reds.—(1) With a view to determining whether the Hanover Reds will attack, and if so, in what direction and when, the division air service should be directed to observe the principal roads leading north, northwest, west and southwest from Hanover, reporting location, strength, composition and direction of movements thereon. The roads to be observed by the division air service should include the roads: Hanover—Abbottstown—Bowlder, Hanover—Hampton, Bittinger—New Oxford—Newchester, Midway—Brush Run—Hunterstown, McSherrytown—Guldens, Midway—Bonneauville, Hanover—Littlestown, Hampton—Pine Church, and Abbottstown—Guldens. It would be an error to limit the area of investigation by South Branch Conewago Creek or by Conewago Creek. During the night an enemy column might possibly capture one or more of the Blue cavalry patrols and advance through the line of these patrols without the knowledge of the Blue cavalry. For this reason the roads to be watched by the division air service should extend from Hanover a short distance behind the Blue cavalry patrols. There is no advantage, however, in directing initially that roads west of the line: Hunterstown—Bonneauville be examined. Since Red has numerous motors, it is conceivable that part of his force, in moving to attack the 1st Division, might make a rather wide detour north of the Conewago, so roads immediately north of that stream should be watched. The early stages of a motor movement out of Hanover might not be observed at night by the division air service.

The air service should be instructed to follow the movement of any column leaving the roads. It likewise should keep the Hanover area under close surveillance for continued presence of troops; and in particular watch the artillery, following its movements and reporting locations of all batteries observed. The Blue cavalry's dispositions have been made at 11:00 PM. It has small posts covering the principal avenues of approach

to the flank of the division. It had a busy day 15 January and 16 January likewise promises to be active. It would be an error to direct extensive reconnaissance by the cavalry during the night 15-16 January. The cavalry, however, should be directed to report any movements through New Oxford or to the west of South Branch Conewago Creek and north of the line: Littlestown—Midway, and to follow the progress of such movements. The cavalry's existing dispositions easily permit this to be done. Beginning at daylight the cavalry should reconnoiter the roads east and south of New Oxford, where its armored cars are located for the night. The cavalry also should be directed to report upon the attitude of the hostile cavalry, particularly any aggressive action as this might well precede an attack by the Hanover Reds.

(2) It is obviously impossible at 11:00 PM, 15 January to assign definite missions which will tend to answer that part of the essential element which covers the question of when the Hanover Reds will have committed the bulk of their forces. The answer to this part of the essential element must be developed by missions which will be given later, after the action of the Hanover Reds develops. It must be clearly understood that the G-2 Plan is subject to change, and that the collection of information is a continuous process. As the result of information gained through one mission, additional instructions will be given the various agencies. For example, at 11:00 PM, 15 January, that part of the G-2 Plan covering the question of whether the Westminster Reds would assume the defensive would have undergone several minor changes since 8:15 AM. Certain missions would have been discarded, and others added, particularly after the Reds gained contact with the Blue position.

11. INSTRUCTIONS TO AGENCIES.—Collecting agencies usually receive instructions concerning reconnaissance or observation missions in two ways—either by means of the Intelligence Annex, or by means of fragmentary messages. In rapidly-moving situations the latter must be used. In cases when there is a lull in operations, the issue of an annex is desirable. An annex can be prepared rapidly by an experienced G-2 Section, although an inexperienced staff may require about two hours for the issue of such a document. In the situation studied in this problem, when the division commander originally made his decision to defend, fragmentary messages would have been used to assign all new missions considered necessary. Later, probably

in the afternoon, an annex would have been issued covering missions for the late afternoon and night. Finally, when the Hanover Reds appeared, additional missions would have been given by fragmentary messages.

THE COMMAND AND GENERAL STAFF SCHOOL

Fort Leavenworth, Kansas
1936-1937

Map Problem No. 33

8 March, 1937

TO ILLUSTRATE HOW A DIVISION COMMANDER MIGHT ENDEAVOR TO DEFEAT AN ENEMY BY DECEIVING HIM AS TO HIS TRUE STRENGTH AND DISPOSITIONS, FROM THE BEGINNING OF OPERATIONS, THEREBY INVITING AN ILL-JUDGED ATTACK AND CREATING AN OPPORTUNITY FOR A COUNTEROFFENSIVE. THE PROBLEM FURTHER COVERS CERTAIN FEATURES OF TROOP LEADING CONNECTED WITH SUCH AN OPERATION

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SECTION I

Situation and First Requirement

	Paragraph
General situation	1
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First requirement	3

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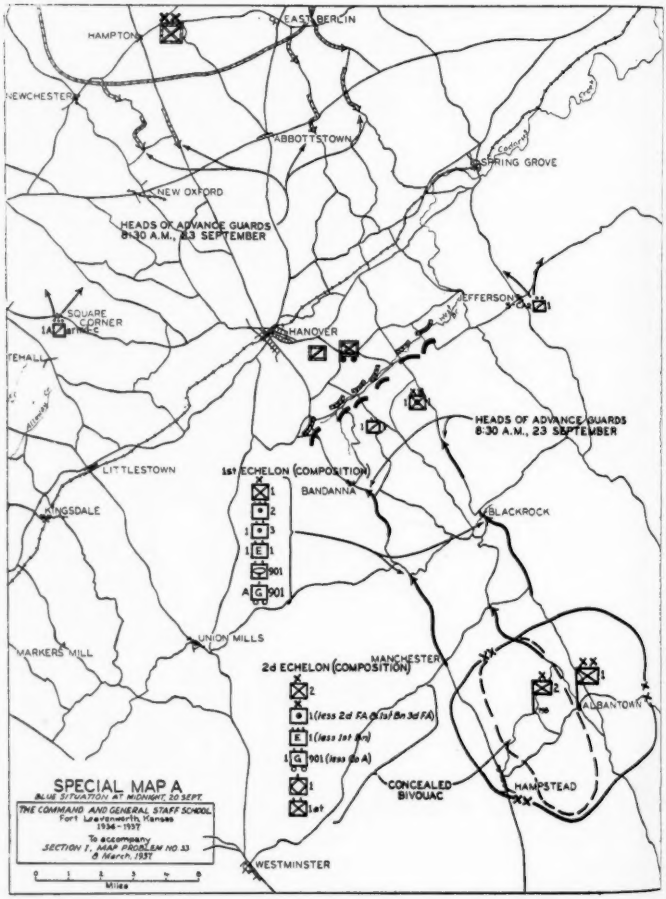
1. GENERAL SITUATION.—*a. Map.*—Special Map A to be issued with Section I.

b. Theater of operations.—For several months no hostile forces have been in this area except daily patrols of observation aviation.

2. SPECIAL SITUATION (BLUE).—*a. The 1st Division.*—The 1st Division (Blue), reinforced, has just completed secret rail

concentration at Baltimore, and is concealed in the areas shown on Special Map A. The only other Blue troops in this area are the home-guard garrisons manning intrenchments around Baltimore and Washington.



b. Situation at midnight, 20 September.—At midnight, 20 September, Major General A, commanding the 1st Division, received the following message from Blue GHQ:

"Reliable information from spies indicates that the Red 5th Division, reinforced, is moving secretly from the north-

west with the mission of gathering supplies in the area east of SOUTH MOUNTAIN and as far south as WESTMINSTER for shipment to the Red main force. The Red division is expected to reach the vicinity of SHIPPENSBURG (310-770) during the night, 20-21 September. Major General X commands the Red 5th Division and is known to be a bold, aggressive commander.

"The 1st Division will defeat the Red division and clear the area between the SUSQUEHANNA and POTOMAC RIVERS, to include SOUTH MOUNTAIN, of all hostile troops."

c. Weather, streams, and roads.—Weather, cool and partially cloudy; forecast, no change. Phase of moon: first quarter (dark of the moon). The Susquehanna and Potomac Rivers are unfordable. All other streams in this area are fordable. All roads shown on Special Map A by double solid lines are all-weather, two-track roads; other roads are one-track roads, generally suitable for use under all conditions of weather.

3. FIRST REQUIREMENT.—The decision of Major General A, at 12:10 AM, 21 September, with a brief statement as to why the decision was adopted.

SECTION II

Second Special Situation

	Paragraph
A solution of first requirement	4
Special situation (Blue), continued	5
Second requirement	6

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4. A SOLUTION OF FIRST REQUIREMENT.—*a. Decision.*—At 12:10 AM, 21 September, Major General A decides to march the division toward Hanover in two echelons; the leading echelon consisting of an infantry brigade, with appropriate reinforcements, to march during daylight hours in three columns; the other echelon to follow under cover of darkness in numerous short columns; the march to be initiated at daylight 21 September; the first bivouac area to be in the wooded area in the vicinity of Chestnut Ridge (395-705).

b. Brief statement as to why this decision was adopted.—In order to accomplish the assigned mission, it is evident that the 1st Division must advance into the probable theater of opera-

tions of the Red division; that is, into the general area north of Westminster. As the routes or direction of advance of the hostile division cannot be predicted accurately, a central location in the general vicinity of Hanover is appropriate.

It is not sufficient for the Blue commander merely to decide to advance toward Hanover. He should endeavor to deceive the enemy and lead him into an unfavorable situation. Daylight marching with the entire division would probably give the enemy full and prompt information of the situation. Considering the relative locations of the two forces, the Blue commander cannot hope, by forced marching, to close the passes through South Mountain before the Red division has crossed these mountains. To march under cover of darkness, initiating the march at dark, 21 September, has the advantage of probable initial secrecy. However, Red patrols would be almost certain to discover the Blue division while it is still at a considerable distance from the Red division. The Red commander would then know of the presence of hostile forces, although he might not know the Blue strength. To march at dark, 21 September, in general, is an acceptable solution. As compared to marching at daylight, 21 September, there is, however, the disadvantage that the enemy will be permitted to advance farther to the south before contact is gained.

To march with one echelon during daylight hours, and one echelon following during the hours of darkness, combines most of the advantages of the two preceding plans. There is the distinct additional advantage that the Red commander may be led into believing that he faces only a Blue brigade and, accordingly, may attack in an ill-judged manner.

Both the march formation and the first bivouac area should be included in the decision. With the march made in two echelons, the distance to the new bivouac area should be about as far as the second echelon can march under cover of darkness, and should not exceed about fifteen miles. For concealment, an area with heavy woods is desirable.

5. SPECIAL SITUATION (BLUE), CONTINUED.—*a. Own troops.*—(1) The leading echelon of the 1st Division, bivouacked in the area shown, during the afternoon, 22 September; the second echelon arrived in the area during the night, 22-23 September, and was concealed by daylight, 23 September.

(2) The leading echelon marched in three columns at daylight, 23 September, and at 8:30 AM was disposed as shown.

(3) During the afternoon, 22 September, the 1st Squadron 1st Cavalry, which preceded the first echelon, encountered hostile cavalry in the general vicinity of Bittinger (370-750). Shortly after daylight, 23 September, under pressure from hostile cavalry and infantry in trucks, the squadron withdrew to the location shown, where it was reinforced by Reconnaissance Detachment No. 1, and has been able to hold since 7:30 AM.

(4) The 901st Observation Squadron is observing for the division, with an advance landing field in the vicinity of the division command post.

(5) The antiaircraft artillery is protecting the marching troops of the first echelon and the bivouac area of the second echelon.

(6) Field and service trains (less detachments) are located as shown.

b. Enemy.—Previously received information that the Red division had crossed to the east of South Mountain was confirmed by reports from the Blue air service, which indicated that the hostile division was emerging from concealed bivouacs in the area shown. By 8:30 AM, 23 September, it was known to Major General A that the Red division was marching south with general dispositions as shown.

6. SECOND REQUIREMENT.—The plan (less administrative details and essential elements of enemy information) of Major General A as announced at 8:45 AM, 23 September.

SECTION III

Third Special Situation

	Paragraph
A solution of second requirement	7
Special situation (Blue), continued	8
Third requirement	9

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7. A SOLUTION OF SECOND REQUIREMENT.—At 8:45 AM, 23 September, Major General A, at the division command post at Albantown (390-725), announced the following plan to his chief of staff:

The division to assume the active defense, defending at once the high ground in the vicinity of Wentz (375-735); the

maneuvering force, consisting of troops of the second echelon, to remain concealed in present location prepared for counteroffensive at the proper time.

1st Brigade to defend the position with MLR along the general line: Blackroad (384-736)—point at (381.8-738.6)—crossroads at (377.0-736.4)—road junction at (376-732). Covering forces under 1st Brigade promptly to relieve the 1st Squadron 1st Cavalry and Reconnaissance Detachment No. 1.

Upon withdrawal, Reconnaissance Detachment No. 1 to be completely reconstituted; the necessary elements to come from units of present first echelon. The new detachment to be employed to support the cavalry at any critical point where such support may be necessary.

1st Squadron 1st Cavalry to permit a hostile advance into the general areas adjacent to the flanks of the defensive position, providing such delay that the enemy will be permitted to reach these areas late in the afternoon; but in no case, to permit the enemy to advance on the right beyond the line: Eklo (397-731)—Rockdale (394-731)—northwest along Gunpowder Falls to vicinity of Blackrock, and on the left beyond the line: road junction at (376-732)—Cranberry (377-725)—Cranberry Station (374-719). Immediate steps to be taken to prevent hostile ground reconnaissance south of these lines.

The artillery now with the first echelon to support the defense and be prepared to mass its fire in support of either flank.

The balloon squadron, engineers, and chemical company, now with the first echelon, to revert to division control, but remain in the general area of 1st Brigade.

Persistent gas prohibited.

Every effort to be made to prevent discovery of the maneuvering force.

8. SPECIAL SITUATION (BLUE), CONTINUED.—*a.* At 9:00 AM, the chief of staff announced to the remainder of the general staff and certain members of the special staff the plan of the division commander.

b. The division command post is at Albantown.

9. THIRD REQUIREMENT.—Outline in chronological sequence the matters which should be accomplished by Major General A during the period between 9:00 AM and 1:00 PM, 23 September.

SECTION IV

A Solution of Third Requirement

Paragraph
A solution of third requirement.....10

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10. A SOLUTION OF THIRD REQUIREMENT.—Outline in chronological sequence the matters which should be accomplished by Major General A during the period between 9:00 AM and 1:00 PM, 23 September:

a. Instructs his chief of staff to initiate preparations of tentative plans for the movement of the maneuvering force for use in the counteroffensive on either flank, and gives him necessary instructions upon which to base these plans. Directs that these tentative plans be drawn up in broad outline for his consideration upon his return to the command post from his air reconnaissance and other visits.

b. Places two aides at the disposal of the chief of staff.

c. Has "Aide Three" inform the chief of staff of the itinerary of reconnaissance and visits of inspection which he intends to make, and of the probable time of his return to the command post.

d. Directs the chief of staff to effect the execution of the defense as quickly as practicable without waiting for further approval, and to have the complete plan for the defense ready for his inspection upon his return to the command post.

e. Supplements his map study by an air reconnaissance, paying particular attention to the areas where the maneuvering force may be employed.

f. Accompanied by "Aide Three," visits the commander of the 1st Brigade and discusses with him the brigade plan for the defense.

g. Visits troops occupying the defensive position to observe dispositions and assist in preparing them for battle.

h. Returns to the command post and obtains information of any new developments in the situation; examines the division defense plan and causes any necessary changes or adjustments to be made.

i. Starts conference with the chief of staff concerning the tentative plans for the counteroffensive which have been drawn up in outline for him during his absence.

SECTION V

Discussion

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Purpose....11
Decision of Major General A at 12:10 AM, 21 September....12
The plan of Major General A as announced at 8:45 AM, 23 September....13
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11. PURPOSE.—*a.* The purpose of this problem is to illustrate how a division commander might endeavor to defeat an enemy by deceiving him as to his true strength and dispositions, from the beginning of operations, thereby inviting an ill-judged attack and creating an opportunity for a counteroffensive. The problem further covers certain features of troop leading connected with such an operation.

12. DECISION OF MAJOR GENERAL A AT 12:10 AM, 21 SEPTEMBER.—*a. Mission.*—The mission of the 1st Division is to defeat the Red (Shippensburg) division and clear the area between the Susquehanna and Potomac Rivers, to include South Mountain, of hostile troops.

b. Opposing forces.—At 12:00 midnight, 20 September, Major General A has information that he is to operate against a force equal to his own. There is no indication that this equality will or will not continue throughout the operations.

c. Red mission and commander.—The mission of the Red division and the character of its commander are known: the mission is to gather supplies in the area east of South Mountain and as far south as Westminster for shipment to the Red main force; the leader of the Red force is known to be a bold, aggressive commander.

d. Red capabilities.—(1) The time and space factors, which result from the distance between the Red and Blue forces, prevent Blue from immediately restricting or canalizing Red movements; therefore, an analysis of Red capabilities at this time is mere conjecture. The most that can be said reasonably is that Red must come east of South Mountain if he is to gather supplies; that, if he is fully to accomplish his mission, he will have to take some positive tactical action against any sizable Blue force which operates in the assigned zone. This action may be offensive or defensive. However, knowing the character of the Red commander and the obvious advantages to him of being able to move without restrictions while carrying out his mission,

it is not unreasonable to conclude that the action taken will be offensive.

e. The plan as adopted (Blue).—To accomplish his mission fully, Major General A must eventually adopt offensive action. Just when or where the decisive action will take place cannot now be determined; the enemy must first be found and fixed. From the beginning, every tactical device used should contribute towards defeating Red when contact is made and decisive action becomes feasible. Major General A, being faced with the prospect of having to engage and defeat a force equal to his own in numerical strength, must contrive to strike that force when it is at a disadvantage as to dispositions. If the Red commander, who is known to be bold and aggressive, can be deceived as to Blue's strength, he may resort to offensive action which may result in an opportunity for a successful counterblow. With this in mind Major General A decides to march to the north in such a manner as to keep a good portion of his division concealed.

Since the Blue division has been concentrated secretly, its strength is unknown to Red. The poor visibility prevailing at night should give Blue a very good chance of keeping secret the presence of a force moving under cover of darkness only. If, in addition, the force marching at night moves in numerous short columns the chance for maintaining secrecy will be materially increased. Wooded areas, which have thick foliage at this time of the year, are available and should afford such a force concealment during daylight. Therefore, a decision which offers a satisfactory formation is one which requires the division to march towards Hanover in two echelons, namely: the leading echelon consisting of an infantry brigade, with appropriate reinforcements, marching in three columns during daylight hours; the other echelon following under cover of darkness in numerous short columns. Since the rear echelon will at no time be more than a day's march in rear of the leading echelon, it should be available in ample time for the counteroffensive, if Red attacks. If Red adopts any other line of action open to him, Blue will be in no danger because of keeping a major portion of his force concealed; he may still reap some benefit from the deception involved.

The march should be initiated at daylight, 21 September. In this situation, it is not practicable to move a force of any considerable size prior to daylight, nor would any particular advantage be gained by such a move. Prior to midnight, 20

September, there has been no warning that a movement is contemplated. The various staffs, combat troops, and supply elements of the division, have had no notice of a contemplated march to the north. The leading echelon could not get under way much before daylight. No tactical advantage would be gained by an earlier start, since the division commander does not plan a forced march. (See paragraph 12 *f.*)

Red may seek supplies in York, Hanover, Gettysburg, Emmitsburg and Westminster, in the several small towns throughout the area, and in the agricultural region which covers the entire area east of South Mountain. Red may emerge into the area east of South Mountain via any of the numerous passes from Dillsburg (350-770) to Thurmont (330-710). Therefore, initial movement of Blue should be toward a central locality, which will place Blue in a location suitable to counter any plan open to Red. Hanover, or its general vicinity, meets this requirement. It is highly desirable that Blue should move north of Westminster in order to control a portion of the area in which Red is to gather supplies and thus increase the chances of a Red attack.

The first stage of the march terminates in the general vicinity of Chestnut Ridge. There are numerous excellent roads leading to this area from Baltimore, as well as excellent lateral roads within the area. The area was selected mainly because the heavy woods found therein will afford concealment for the second echelon during daylight, 22 September. The area is within fifteen miles from Baltimore, and the troops marching under cover of darkness should be able to complete the march and be carefully concealed before daylight.

f. Other plans considered (Blue).—(1) *To make a forced march to the north or northwest, 21 September, with the entire division.*—If Red could be prevented from emerging from the passes of South Mountain into the area east thereof, Blue's mission would be fulfilled in part. The distances from Baltimore to the exits of the passes of South Mountain, as compared to the distances from Shippensburg to Chambersburg or Carlisle and thence through the mountains to the eastern exits of the same passes, all favor Red. Therefore, time and space dictate against a race for the eastern exits of South Mountain. The passes which Red will use in moving east are unknown to Blue; they are many and extend over a broad front. Since the axis of advance of the enemy is not known, it is inadvisable for Blue

to proceed to any locality other than a central one. A forced march would necessitate day and night marches and would offer Red the opportunity of securing accurate information as to Blue's strength and dispositions, which is undesirable because of Blue's offensive mission and the existing equality in numbers.

By a forced march, the Pigeon Hills area might be secured by Blue prior to the arrival of Red, but this is problematical since the distance from Baltimore to this area is greater than the distance from Shippensburg. To permit Blue to reach this area first, Red would have to delay his movement to the east while Blue was making a forced march, a procedure which Red can hardly be expected to follow. Even if secured, the tactical advantage gained by Blue would be nominal. There are other strong defensive positions south and southwest of the Pigeon Hills area which will meet Blue's needs for the defensive phase of the operations. The tactical advantages gained by keeping the strength and dispositions of Blue secret outweigh the advantages gained by a forced march.

(2) *To have a portion of the division, such as a reinforced brigade, make a forced march to the north, 21 September; the remainder of the division following under cover of darkness by normal stages.*—The discussion and conclusions found in the paragraph covering a forced march by the entire division are equally applicable to a forced march by a portion of the division.

The fact that a certain portion of the division moves by night marches offers Blue an opportunity to deceive Red as to strength and dispositions. This feature is in favor of this plan.

In the first plan discussed, one of the desirable features was that the second echelon would at no time be more than a day's march in rear of the first echelon. An undesirable condition of the plan now under consideration is that as the leading echelon progresses by forced marches it will get farther and farther away from the rear echelon which moves only a normal distance each night. The situation thus created may permit the defeat of Blue in detail or cause the failure, if the second echelon does not arrive in time, to strike a counteroffensive blow at an advantageous time.

(3) *To march the division to the north under cover of darkness, initiating the march on the night 21-22 September.*—If the division marches under cover of darkness, secrecy of movement may be attained for a considerable distance to the north. It may be expected, however, that the hostile cavalry will operate well in

advance of the Red division and discover the presence of Blue troops. Having once made this discovery, the hostile cavalry and air service will endeavor to determine the Blue strength and dispositions. While they may not be successful, the Red commander would probably be more wary than would be the case if he could be led into believing that he was opposed by a Blue brigade only.

It is obvious that the time and distance which would be lost by delaying the start of the march until the night, 21-22 September, would permit the Red division to march farther to the south before contact.

(4) The adopted plan offers Blue a better chance of defeating Red than the other plans considered. It includes certain definite elements of deception which are considered essential if Red is to be drawn into an ill-judged attack and then struck a successful counterblow. While the plans discussed under subparagraphs (1), (2), and (3) above cannot be considered as entirely faulty, they do not take full advantage of the possibilities of the situation. Any decision to march generally to the north without unnecessary delay is, in general, satisfactory. However, in considering just how this advance is to be accomplished, an effort should be made to place the Red force in as disadvantageous a situation as practicable. This effort can best be accomplished by deception, and the opportunity to deceive the enemy by the initial advance should not be neglected. The known characteristics of the Red commander are important factors in deciding upon the plan. His boldness and aggressiveness immediately indicate the possibility of an active defense. The decision should exploit these characteristics to a maximum and should endeavor to make the counteroffensive action as decisive as possible.

13. THE PLAN OF MAJOR GENERAL A AS ANNOUNCED AT 8:45 AM, 23 SEPTEMBER.—*a. General.*—The plan should contain the decision of the commander and the general plan for the employment of the command as a whole to meet the situation. The amount of detail should be sufficient to insure a clear comprehension on the part of the division staff as to what is to be accomplished by the force as a whole. Instructions in connection with certain important features, which are peculiar to the intended operation, should be included. Detail that can be well supplied by a trained staff should not be included.

b. The decision.—(1) The mission of the 1st Division is unchanged. The situation now confronting Major General A, calls for positive action which will lead to the full accomplishment of his mission. The mission may be accomplished only by offensive action. Two forms of offensive action are open to the Blue commander: an attack or an active defense.

(2) *An attack.*—An attack against Red offers some chance of success, but the outcome is doubtful because the forces are equal. In addition, the Blue forces are not well disposed for an immediate attack, nor would it be advisable to decide definitely upon an attack until the advance of the Red division had been checked. An attack by Blue should be resorted to only after Red has shown a disinclination to attack and be led into an unfavorable situation.

(3) *Active defense.*—The Blue commander from the outset has had the active defense in mind. The opportunity has now arrived to put this plan into effect. There is nothing to indicate that the Red commander has discovered the deception. As there is a strong chance that he may attack in a manner which will afford an ideal situation for counteroffensive action, the decision should make full use of the opportunity by assuming an active defense. If the Red division does not attack, Blue will still be in position to regroup promptly, and to employ such offensive measures as the situation warrants.

c. Location of the defensive position.—(1) A position defending the high ground in the vicinity of Wentz, with flanks refused, is the most suitable because:

(a) It blocks the direct advance of the enemy.

(b) It is within suitable supporting distance of the maneuvering force.

(c) It takes advantage of the most commanding observation in the immediate area and offers excellent fields of fire both to front and flanks.

(d) It can be occupied without interference from the enemy, and considerable time will be available for its organization.

(e) It has sufficient natural strength to permit its successful defense by the force available.

(f) It facilitates future action, particularly the launching of the counteroffensive.

(g) There are adequate lateral roads in rear of the position to permit the lateral movement of the maneuvering force. The dominating hills limit terrestrial observation of such movement.

(h) The refusal of the flanks invites a wide envelopment, and such an attack by Red, on either flank, northwest of the Manchester hill mass will offer the most favorable opportunity for a successful Blue counteroffensive.

(2) A position protecting the high ground in the vicinity of road junction 909 (381-740) and Bandanna (377-738) is satisfactory. However, to protect adequately the essential (Wentz hill) observation from a flank attack, it may require a position extending over a frontage beyond the capabilities of the defending force. It is so far removed from the present location of the maneuvering force, that the problem of keeping this force concealed may become a difficult one.

A position more to the northwest is undesirable for the same reasons, and as the position is moved farther to the northwest, the defects indicated become increasingly applicable.

(3) A position southeast of the Wentz hill mass is not desirable, mainly because it gives up important terrain to the enemy, and is too close to the area occupied by the maneuvering force. The valleys between Dug Hill Ridge and the Wentz hill mass and Dug Hill Ridge and the Manchester hill mass do not offer good defensive positions. A position on the Manchester hill mass would necessitate the rearward movement of the counteroffensive force, a highly undesirable procedure.

d. The initial location of the maneuvering force.—The initial location of the maneuvering force should be the present location of the second echelon. At 8:45 AM, it is not practicable to decide upon the area from which the counteroffensive will be launched, nor to decide when it will be launched. Red's actions during the remainder of the day and early tonight may permit a decision as to these two factors. Until the information necessary to make these decisions is at hand, the maneuvering force should remain in its present location. Even though it may appear that one of the flanks is more inviting to the enemy than the other and that action from this flank may be anticipated, for the purposes of secrecy and surprise, the maneuvering force should not be moved during daylight hours. The counteroffensive force will not be needed in the action during daylight 23 September. Red is capable of making a coordinated frontal attack or a close-in envelopment of the right (northeast) flank late in the afternoon of 23 September. A close-in envelopment of the left (southwest) flank from the vicinity of Cherry Grove School (371-733) cannot be made until dark or shortly there-

after. A wide envelopment of either flank can be made after daylight, 24 September. Therefore, the defending force should be capable of holding the position against any Red attack on 23 September without the aid of the counteroffensive force. The present location of the second echelon has ample space, good cover and concealment, is beyond the range of hostile light artillery fire, and provides excellent good roads for lateral movement.

e. The defending force.—The defending force should consist of the infantry and artillery comprising the first echelon. This force is a complete combat team of sufficient strength to occupy and defend the position selected. No combat troops should be taken from the second echelon to augment this force, first, because no increase in strength is needed; and, second, because any sizable movement from the area of the maneuvering force may disclose its location. The 1st Brigade should be directed to defend the position. A main line of resistance should be prescribed. The line should be such that its location and the refusal of its flank will permit its nose to be occupied by about two infantry battalions, which should be placed in position to meet and check any direct advance of the enemy. This disposition will leave four battalions as a reserve to maintain the position or extend the flanks. The main line of resistance should be a sufficient distance in front of the principal observation to provide a suitable location for the regimental reserve line. The extent of the position to be defended should be commensurate with the size of the defending force.

The main line of resistance prescribed satisfactorily fulfills the conditions indicated above.

The prompt relief of the cavalry and reconnaissance detachments by the covering force of the defending brigade is important. This will release these units for other more important duties.

f. Instructions for and composition of the maneuvering force.—The major combat elements of the maneuvering force should be designated and should be as strong as practicable. This purpose is easily and satisfactorily accomplished in this situation by designating the combat troops comprising the second echelon. At least an infantry brigade should be included in this force. None of the artillery with the second echelon should be removed therefrom to support the defense of the position because the artillery with the defending force is sufficient to provide the

needed support, and any excessive daylight movement from the area of the maneuvering force may disclose its location. Should it later become necessary to reinforce the artillery on the defensive position, the artillery held with the maneuvering force can be moved forward. It is highly desirable, however, that all of the artillery found initially with the second echelon remain concealed and not come into action until the counteroffensive phase of the operations. Instructions for the maneuvering force to initiate plans for the counteroffensive need not be included in the division commander's plan, because the instructions for the counteroffensive can be announced in a subsequent plan. If the flank on which the maneuvering force is most likely to operate could be decided now, the plan would so indicate. Such a decision is not justifiable at this time. The reasons previously given for not assigning a priority to either flank in locating the maneuvering force are equally applicable here.

The final outcome of the entire engagement depends upon the success or failure of the counteroffensive. Up to the present time, every effort has been made to keep secret the presence and strength of the force to be used for the main attack of the counteroffensive. Therefore, the plan should include specific instructions calling attention to the necessity of preventing the discovery of this force and directing the efforts of the entire command to this end.

g. Employment of certain elements during the defensive phase. —(1) *Cavalry.*—The plan should include instructions relating to the employment of the cavalry during the defensive phase. Its correct use is particularly important to the success of the plan as a whole, and an outline of how the division commander desires it to operate should be given to the staff.

As soon as the 1st Brigade has established the necessary covering forces, the cavalry and reconnaissance detachment should be released from covering the front of the position. The cavalry should then be assigned two important tasks. First, it should control the advance of the enemy into the areas adjacent to the flanks of the position. It should so delay this advance as to permit the enemy to reach these areas late in the afternoon, 23 September. The object of this action is to continue the deception of the enemy and to permit him to reach an area for his attack which will be especially favorable for the Blue counteroffensive action. Second, but most important, the cav-

alry should be given the task of preventing the enemy from obtaining, by ground reconnaissance, information of the maneuvering force. This mission can best be accomplished by designating lines on both flanks, at a suitable distance from the maneuvering force, beyond which the enemy should not be permitted to advance. Steps carrying out the screening mission should be initiated immediately, because the enemy may endeavor to push reconnaissance around the flanks as soon as possible.

In carrying out the above-mentioned missions, adequate information of the enemy will be obtained; therefore, a purely reconnaissance mission is not necessary.

As both flanks are equally exposed and there is no indication that the enemy will choose one or the other to operate against, it is not advisable for the commander to order the bulk of the cavalry to either flank. Furthermore, the manner of employing his force to accomplish the difficult tasks assigned should be left to the cavalry commander. The location of the bulk of the cavalry should depend on the action of the hostile cavalry.

(2) *The reconnaissance detachment.*—The use of the reconnaissance detachment, like the cavalry, is peculiar to this situation, and special mention of its planned employment should be made. Generally speaking, it should be withdrawn as soon as the position is protected by covering forces. As the cavalry again may need the support of a reconnaissance detachment, Reconnaissance Detachment No. 1, which may have suffered heavy casualties, should be reconstituted. The detachment, as reconstituted, should be held mobile prepared to support the cavalry as may be necessary.

(3) *Artillery.*—In this situation it is not necessary to include in the commander's plan any instructions for the artillery other than the allotment of the artillery to the defending force and the maneuvering force, and the direction as to preparations for the massing of fire. The allotment is accomplished by the assignment of one marching echelon to the defense of the position, and the other as the maneuvering force. If this allotment had not been made, it would have been necessary to include certain instructions in the plan relative to the distribution of the division artillery between the two forces. In order to continue the deception, the artillery with the leading echelon should be employed to support the defense. This artillery

should be augmented only in case the commander believes that stronger support of the defense is essential. In this situation, no increase is needed because the enemy cannot carry through an attack against the defending brigade before the maneuvering force enters the action. Strong support of the counteroffensive is relatively more important, and the artillery now with the second echelon should be held intact to be used to support the offensive action of the maneuvering force.

As the flanks are obviously the most vulnerable parts of the position, they should be given priority in the artillery defense. Since both flanks are equally vulnerable, they should be given equal consideration.

Other details relative to the employment of the artillery are more or less routine and can well be left to the staff.

(4) *Use of chemicals.*—A restriction on the use of persistent gas should be included, and any use should be on division orders only. Care must be taken in a situation of this kind not to contaminate, with persistent gas, the ground over which the attacking troops will pass when the counteroffensive is launched. It is not now known where friendly troops will operate during this later phase of the operations.

The commander does not desire to prevent or delay the advance of the enemy beyond a certain time; therefore, persistent gas should not be used for delay.

(5) *Other units.*—The 1st Battalion 1st Engineers, 901st Balloon Squadron, and Company A 901st Chemical Regiment should revert to division control. As the balloon squadron will be required during the defensive phase, and the other units will probably be used with the 1st Brigade during the counteroffensive, all three should remain in the general area of the 1st Brigade. Further details or instructions for other units should be left to the division staff.

14. MATTERS ACCOMPLISHED BY MAJOR GENERAL A.—*a. Tentative plans for the counteroffensive.*—The counteroffensive phase of an active defense, although closely related to the defensive phase, calls for separate plans and orders. The plan of Major General A, as announced at 8:45 AM, actually covered the defensive phase of the operations only. The situation as known at that time did not permit the announcement of any definite plans for the counteroffensive. In a situation of this kind, it is desirable to begin the preparation of tentative plans for the counteroffensive as early as practicable. These plans

will be tentative and in broad outline only, but will be sufficient to coordinate the basic ideas of the division commander, the division staff, and the subordinate commanders concerned, and to direct all efforts along desired lines. It should be borne in mind that the contemplated counteroffensive is a coordinated attack, probably preceded by a night movement of the maneuvering force. Such an operation to be successful, requires careful planning and coordination. Prior to dark, 23 September, reconnaissances should be made of probable routes to be followed and tentative areas to be occupied by the maneuvering force, with a view to making the main attack of the counteroffensive from either flank. All available time will be needed. Therefore, Major General A should initiate action on these tentative counteroffensive plans without delay, and preferably before leaving the command post. He should indicate his desire to see these plans, in broad outline, upon his return to the command post from his air reconnaissance and other visits.

b. Reconnaissance and visits to subordinate commanders and troops.—After announcing his plan for the defensive phase of the operation, and initiating action on the tentative plans for the counteroffensive, Major General A has several hours at his disposal for reconnaissance and visits to subordinate commanders and troops.

An air reconnaissance to supplement a map study will obtain additional information of the terrain in the areas where the maneuvering force will probably be employed. The information gained by such a reconnaissance should prove of value during the remainder of the operations, and particularly when the time comes for developing the final plans for the counteroffensive. If during his air reconnaissance, Major General A obtains any information which he believes will prove of immediate value to his staff, concerning either the defensive phase or the counteroffensive phase of the operations, he should communicate this information to his command post at the first opportunity. He may find it possible to reach his command post by telephone from the landing field or from the command post of the 1st Brigade, or if he so desires, he may stop at his command post while en route from the landing field to the area of the 1st Brigade.

The commander of the 1st Brigade and the troops occupying the defensive position are performing a major task for the

division. Accordingly, Major General A should visit the 1st Brigade commander and discuss with him his defense plans.

A visit to the troops occupying the defensive position is important. During such a visit, the division commander can discuss with subordinate commanders their plans and obtain first-hand information of the state of the command. His presence in this area will encourage the troops and tend to prepare them for battle.

In order to have time to make the air reconnaissance and the visits mentioned, it will be necessary for Major General A to leave to his staff the working out of the remainder of the plan for the defense and the execution of the details pertaining thereto. He should direct the chief of staff to proceed with the execution of the defense as quickly as practicable without waiting for further approval, and to have the complete plan for the defense ready for inspection when he, Major General A, returns to the command post. It is essential that the execution of these plans be effected without delay. The defense plan as previously given to the chief of staff in this situation contains sufficient information to enable the staff to work out the details of the plan, and to issue fragmentary orders therefor, without further approval. Major General A, however, will want to see what has been accomplished when he returns to the command post, and he may find it necessary at that time to cause certain changes or adjustments to be made.

c. Return to the command post.—Upon his return to the command post, Major General A has two immediate tasks before him. First, he should obtain full information of developments which have occurred in the situation during his absence; he should examine particularly the completed plan for the defense, and should indicate any necessary changes. The changes made would probably be small but important, brought about by information obtained during the air reconnaissance and visit to the defense area.

As a result of his air reconnaissance and his visit to the defensive area, Major General A has no doubt developed more positive ideas concerning the counteroffensive phase of the operations; and upon his return to the command post certain additional information of the enemy should be available to him. Therefore, he should confer, soon after his return, with his chief of staff concerning the tentative plans for the counteroffensive. He should be in a better position now to guide his staff along

definite lines of action in regards to the counteroffensive, than he was earlier in the day.

d. Supplementary duties.—If Major General A makes the air reconnaissance and the visits indicated above, he will be away from his command post for considerable time. Therefore, he should give the chief of staff an itinerary of the reconnaissance and visits he intends to make, and should indicate the probable time of his return to the command post.

While not essential, two aides should be placed at the disposal of the chief of staff. During his absence from the command post, Major General A will have little need for more than one aide, and the other two may be used to good advantage by the staff.

THE COMMAND AND GENERAL STAFF SCHOOL

Fort Leavenworth, Kansas
1936-1937

Map Problem No. 40

9 April, 1937

THE GENERAL PLAN OF SUPPLY AND EVACUATION—CONTINGENCIES CONSIDERED BY G-4—ALTERNATIVES CONSIDERED BY G-4 TO MEET EACH CONTINGENCY—LOCATION OF RAILHEADS AND CORPS INSTALLATIONS FOR AN ATTACK ON BALTIMORE, MARYLAND

	Paragraphs
SECTION I.—Situation	1–2
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SECTION I

Situation

	Paragraph
General situation	1
Special situation (Blue)	2

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1. GENERAL SITUATION.—*a. Maps.*—Special Map A to be issued with Section I. Special Map B to be issued with Section III.

b. Boundary.—The Potomac River forms part of the boundary between two states, Blue (south) and Red (north). The territory between the Potomac and Susquehanna Rivers and east of South Mountain (inclusive) was formerly a part of the Blue state, but was invaded, captured, and annexed by the Red state in 1924.

c. Hostile forces.—The Red state is at war with another state to the north but has retained small detachments of second-

line troops to preserve order in its annexed territory southwest of the Susquehanna River. It is estimated that the combined strength of these detachments is not in excess of an infantry division.

d. Blue concentration.—On 10 April, 1937, the Blue state will begin concentrating the I Corps south of the Potomac River, for the purpose of capturing Washington and Baltimore, driving the Red forces north of the Susquehanna River, and regaining its lost territory.

e. Aviation.—The Red state has employed combat aviation of all classes in its northern theater. The Blue state's combat aviation consists only of pursuit and attack.

2. SPECIAL SITUATION (BLUE).—*a. I Corps.*—The I Corps, Lieutenant General A commanding, consists of normal corps troops (see Table 2, pages 12 and 13, *Reference Data*, C&GSS, 1936), the 1st, 2d, and 3d Divisions and normal reinforcements as listed in paragraph 1, Table 11, page 20, *Reference Data*, C&GSS, 1936.

In addition to the attachments in Table 11, *Reference Data*, C&GSS, 1936, the I Corps has the 901st and 902d Field Artillery (75-mm gun, truck-drawn), and the 903d Field Artillery Brigade [904th, 905th and 906th Field Artillery Regiments (155-mm gun, truck-drawn)], attached.

b. Situation at 1:00 PM, 9 April.—At 1:00 PM, 9 April the situation as known to Lieutenant General A and his general staff at the command post of the I Corps at Manassas (330-620) is as follows (see Special Map A):

(1) *Enemy.*—The bulk of the Red troops southwest of the Susquehanna River are located in Baltimore. Detachments of infantry are located at Washington, Frederick, Westminster, Gettysburg, and York. It is estimated that not in excess of one infantry division and some corps troops are immediately available to Red for movement from their northern theater to the Baltimore area and that leading elements can arrive in this area twenty-four hours after receipt of orders. It is further estimated that Red troops will be unable to oppose effectively the crossing of the Potomac River by the I Corps.

(2) *Own forces.*—(a) The I Corps will concentrate by rail and motor: the I Corps (less 3d Division, reinforced, and 1st Cavalry Brigade) in the area: Lorton (350-610)—Fairfax (345-630)—Gainesville (315-625)—Nokesville (320-610); and the 3d Division, reinforced, and 1st Cavalry Brigade in the area:

Charlestown (290-680)—Berryville (280-665). Leading elements will arrive in the concentration areas at 9:00 PM, 10 April. Concentration will be completed by daylight, 13 April.

(b) Units will arrive in the concentration areas completely equipped.

(c) Supply and evacuation of the I Corps will be through a Regulating Station at Front Royal (260-640).

(d) Hospitalization will be provided by GHQ in the concentration areas.

(e) No corps depots will be established in the concentration area.

(f) Sufficient credits for the contemplated operations have been allocated the I Corps in depots and hospitals located approximately 80 miles southwest of Front Royal.

(g) Upon crossing the Potomac River, the rear boundary of the I Corps will be the south bank of the Potomac River.

c. Plan of I Corps.—At 1:00 PM, 9 April, Lieutenant General A's general staff is familiar with his general plan for the employment of the I Corps. Pertinent extracts of the plan are as follows:

> "Leading elements of the I Corps, upon arrival in the concentration areas, to advance immediately and seize the crossings of the Potomac River at Harpers Ferry (300-690), Point of Rocks (320-680), and Washington and establish bridgeheads. To be reinforced as necessary to hold these bridgeheads.
>
> "The I Corps to cross the Potomac River on the night 13-14 April, advance, capture Baltimore, and drive the Red forces north of the Susquehanna River.
>
> "(1) The I Corps (less the 3d Division and 1st Cavalry Brigade) to cross the Potomac River at Washington and advance to the north with a view to attacking Baltimore from the southwest and west.
>
> "(2) The 3d Division, reinforced, to cross the Potomac River at Harpers Ferry and Point of Rocks, advance rapidly to the northeast, with a view to enveloping Baltimore from the northwest.
>
> "(3) The 1st Cavalry Brigade, reinforced, to cross the Potomac River at Harpers Ferry, assist the advance of the 3d Division, and protect the left flank of the Corps."

d. Roads and railroads.—(1) All roads shown in double (solid or broken) lines on Special Map A are suitable for sustained two-way motor traffic. All roads shown by single lines on Special Map A are suitable for sustained one-way motor traffic. There are numerous other roads not shown on Special Map A which are suitable only for foot and animal-drawn traffic. It can be assumed that all railway stations are connected to the nearest road shown on Special Map A by a suitable all-weather road.

(2) The only railroads existent between the Susquehanna River and the Potomac River (inclusive) southeast of the Cumberland Valley (inclusive) are those overprinted in *red* on Special Map A.

e. Rivers, streams, bridges, and ferries.—(1) The Susquehanna River and Potomac River are unfordable. All other rivers and streams are fordable for foot and animal-drawn traffic only.

(2) Bridges and ferries are as shown on Special Map A.

SECTION II

First Requirement

Paragraph
First requirement 3

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3. FIRST REQUIREMENT.—See Form A in Section IV.

SECTION III

Situation, Continued, and Second Requirement

Paragraph
Situation (Blue), continued 4
Second requirement 5

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4. SITUATION (BLUE), CONTINUED.—*a. Events prior to 5:30 AM, 19 April.*—Crossings of the Potomac River at Washington, Point of Rocks, and Harpers Ferry were seized by advance elements of the I Corps on the night 10-11 April. Following the concentration, the I Corps began crossing the Potomac River on the night 13-14 April as planned and advanced on Baltimore.

Elements of the I Corps crossing at Washington met increasing resistance as the advance continued, and Red troops from Baltimore were thrown against them.

The 3d Division, reinforced, moving by marching and motor, and the 1st Cavalry Brigade, advanced on Westminster, meeting but slight resistance.

b. Tactical situation at 5:30 AM, 19 April.—(1) *Enemy.*—Red forces estimated as a small corps of two divisions have withdrawn to the vicinity of Baltimore and are organizing a defensive position south, west, and northwest of that city as indicated on Special Map B.

(2) *Blue.*—Major tactical elements of the I Corps are located as indicated by solid line symbols on Special Map B.

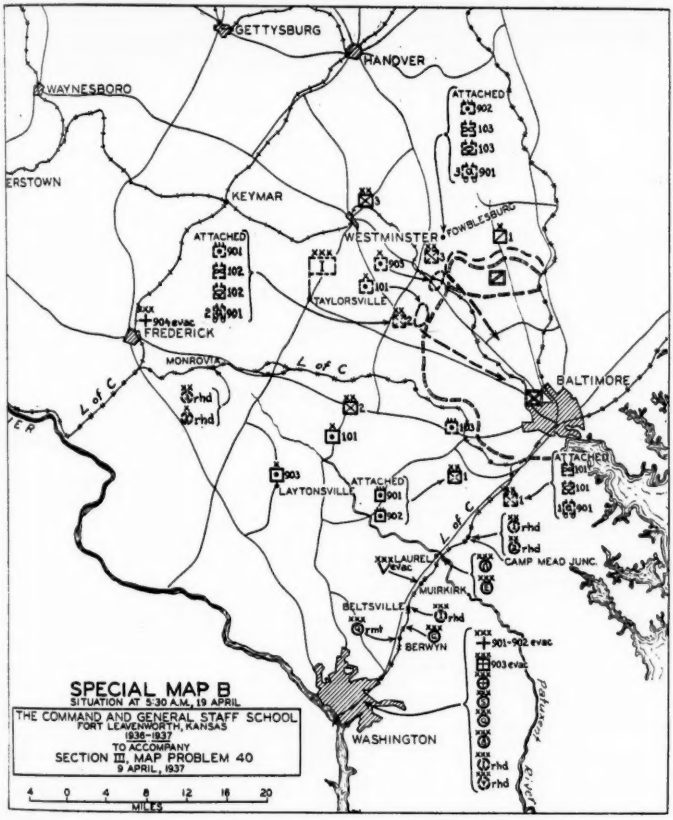
Leading elements of the 1st Division have driven in Red covering forces and are in contact with the hostile Red position northeast of the Patapsco River between St. Dennis (400-675) and Hollofield (390-685). The 1st Cavalry Brigade has reached the line indicated on Special Map B and is in contact with hostile cavalry and small groups of infantry.

The 2d and 3d Divisions and Corps Artillery are in concealed bivouacs, as shown on Special Map B.

The 910th Brigade (L of C) reinforced, is protecting the lines of communication and supply installations shown on Special Map B.

c. Administrative situation at 5:30 AM, 19 April.—Because of damage to railroad bridges at Washington and Harpers Ferry by retreating Red border guards, movement of supplies across the Potomac River has been retarded. Repairs were completed on these bridges at dark 18 April, and during the night 18-19 April some supply trains arrived in the area of the I Corps. Others are en route south of the regulating station. It is estimated that total supplies of all classes north of the Potomac River including those with the troops are as follows: ammunition, sufficient for two days of attack; Class I, two days of supply; Class II, III, and IV (less ammunition) sufficient for one day of attack. All railroads overprinted in *red* on Special Map B except the line: Jessup (395-665)—Relay (400-675)—Sykesville (375-690) are in operating condition.

The 3d Division and the 1st Cavalry Brigade are now being supplied through railheads at Monrovia (350-690). Present location of supply and evacuation installations to serve elements of the I Corps are as indicated on Special Map B.



In preparation for the attack on Baltimore, G-4 and special staff officers have made a thorough reconnaissance of the area within which the I Corps is operating with a view to changing the principal line of communication of the I Corps from the B and O Railroad through Washington to the B and O Railroad west of Sykesville through Frederick Junction, Point of Rocks, and Harpers Ferry, and plans have been made for locating the bulk of the corps supply and evacuation installations along this line.

d. Plan of attack.—Lieutenant General A's general and special staff are familiar with his plan for the attack on Baltimore, which includes in part the following:

(1) To attack the hostile position west and northwest of

Baltimore at daylight, 20 April, making the main effort of the I Corps in the direction: Westminster—Baltimore.

(2) Location of major tactical units for the attack, attachment of troops, and directions of attack as shown on Special Map B by symbols in broken lines.

(3) The 1st Division, reinforced, to attack on its present front with its principal effort in the direction: Murray's Siding (400-670)—Arbatus (400-680).

(4) The 1st Cavalry Brigade to attack and defeat the hostile cavalry on its front and protect the left flank of the corps.

e. Situation at 5:45 AM, 19 April.—By 5:45 AM, 19 April, the commander and his general and special staff have information that at 4:55 AM, 19 April, hostile aviation bombed all bridges over the Potomac River in the vicinity of Washington and damaged them to such an extent that they cannot be repaired in less than seven days. Heavy losses were sustained by the hostile aviation.

f. Instructions of G-4 I Corps to Special Staff Officers.—Following the receipt of information of damage to the bridges over the Potomac River at Washington, G-4 I Corps instructed those special staff officers charged with supply and evacuation that all supply and evacuation installations would be located on the B and O Railroad west of Sykesville (exclusive) (275-690) and east of the Monocacy River, and directed them to submit to him without delay, their recommendations and alternative recommendations for the location of supply and evacuation installations to serve the I Corps during its attack on Baltimore.

5. SECOND REQUIREMENT.—Actions taken with brief reasons therefor by G-4 I Corps on the recommendations submitted by the Corps Special Staff Officers for the locations of supply and evacuation installations for the attack of the I Corps on Baltimore. (See Form B in Section IV.)

SECTION IV

A Solution

Paragraph
A solution of first requirement ---------- 6
A solution of second requirement ---------- 7

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6. A SOLUTION OF FIRST REQUIREMENT.

FORM A

3. FIRST REQUIREMENT.—*a. General plan of supply and evacuation of the I Corps for the advance on Baltimore.*

(1) To make no change in the present method of supply and evacuation prior to crossing the Potomac River.

(2) To use the following railroads for the supply and evacuation of the I Corps after crossing the Potomac River:

(a) For the I Corps (less 3d Division and 1st Cavalry Brigade), the B & O Railroad northeast from Washington

(b) For the 3d Division and the 1st Cavalry Brigade, the B & O Railroad through Harpers Ferry, Point of Rocks, Frederick ...ction and to the east towards Baltimore.

(3) To supply the I Corps as follows:

(a) The I Corps (less 3d Division and the 1st Cavalry Brigade) initially through railheads and corps depots established in Washington and northeast thereof.

(b) The 3d Division and the 1st Cavalry Brigade initially through railheads located north of the Potomac River.

(c) Class I supply to be daily automatic.

(4) Initially to maintain battle reserves north of the Potomac River as follows:

(a) In Washington, as soon as it is secure from artillery fire: Class II, III, and IV supplies (less ammunition) sufficient for three days of attack of a position for all troops of the corps, and sufficient ammunition for three days of attack of a position for those troops crossing at Washington, the bulk of these supplies to be held mobile on railroad trains.

(b) A reserve, consisting of one day of Class I supply and ammunition sufficient for three days of attack of a position for the 3d Division and the 1st Cavalry Brigade held mobile on railroad trains to follow these troops.

(5) *Evacuation.*—The I Corps to evacuate initially to evacuation facilities located in the concentration area. Subsequently to evacuation hospitals located in Washington and Frederick.

b. Contingencies considered by G-4, I Corps, resulting from enemy activity, which might require major changes in the general plan for supply and evacuation of the I Corps, after it has crossed the Potomac River and prior to the attack on Baltimore.	*c. Alternatives condidered by G-4, I Corps, to meet each of these contingencies.*	*d. Steps taken by G-4, I Corps, in furtherance of each alternative to include:* (1) *Subjects of special reports required of Special Staff Officers of the I Corps.* (2) *Necessary arrangements with higher echelons of command and supply.*
(1) Interruption of rail lines of communication through Washington or through Harpers Ferry.	(1) (a) If rail lines of communications through Washington are interrupted: supply and evacuation of elements of the I Corps advancing through Washington initially to be through railheads and corps installations to be located south of the Potomac River; subsequently through corps installations on the B & O RR east of Frederick Junction, or by corps transportation to refilling points north of Washington.	(1) (a) (i) Subjects of special reports required of Special Staff Officers of the I Corps: (aa) Suitable locations for railheads and corps supply and evacuation installations. (bb) Additional trucks, ambulances, and labor required. (cc) Location of construction material. (ii) Necessary arrangements with higher echelons of command and supply: (aa) Provision for immediate repair of lines of communications by GHQ. (bb) Necessary additional trucks, ambulances, and labor from GHQ.
	(b) If rail lines of communications through Harpers Ferry are interrupted: supply and evacuation of elements of the I Corps advancing through Harpers Ferry and Point of Rocks initially to be through	(b) Same as *d* (1) (a) above.

	(b) If rail lines of communications through Harpers Ferry are interrupted: supply and evacuation of elements of the I Corps advancing through Harpers Ferry and Point of Rocks initially to be through railheads to be located south of the Potomac River; upon sufficient advance by these elements, supply and evacuation to be through railheads and corps installations located on lines of communication through Washington.	(b) Same as *d* (1) (a) above.
(2) Interruption of rail lines of communications through Washington and damage to highway bridges at Washington or interruption of rail lines of communications through Harpers Ferry and damage to highway bridges west of Point of Rocks, inclusive.	(2) (a) If rail lines of communications through Washington are interrupted and the highway bridges at Washington are damaged, supply and evacuation of elements of the I Corps advancing through Washington to be through railheads and corps installations located on lines of communication through Harpers Ferry.	(2) (a) (i) Subjects of special reports required of Special Staff Officers: (aa) Additional trucks, ambulances, and labor requirements. (bb) Location of construction material. (ii) Necessary arrangements with higher echelons of command and supply: Same as *d* (1) (a) (ii) above.
	(b) If rail lines of communications through Harpers Ferry are interrupted and highway bridges west of Point of Rocks (inclusive) damaged, supply and evacuation of elements of the I Corps advancing through Harpers Ferry and Point of Rocks to be through railheads and corps installations located on lines of communication through Washington.	(b) Same as *d* (2) (a) above.
(3) Interruption of rail lines of communications through Washington and Harpers Ferry.	(3) If all rail lines of communications through Washington and Harpers Ferry are interrupted, supply and evacuation of the I Corps to be initially through railheads and corps installations to be located south of the Potomac River, subsequently by corps transportation to refilling points north of the Potomac River.	(3) Same as *d* (1) (a) above.
(4) Damage to all bridges over the Potomac River in zone of action of the I Corps.	(4) If all bridges over the Potomac River in the zone of action of the I Corps are damaged, to utilize existing ferries where practicable, to build ponton bridges over the Potomac River, and to supply and evacuate the I Corps initially through railheads and corps installations to be located south of the river, and subsequently by corps transportation to refilling points north of the Potomac River. Determine practicability of supply and evacuation through Washington by water.	(4) (a) Subjects of special reports required of Special Staff Officers: (i) Same as *d* (1) (a) (i) above. (ii) Suitable locations for ponton bridge construction. (iii) Availability of ferries of sufficient capacity and the practicability of their use. (b) Necessary arrangements with higher echelons of command and supply: (i) Same as *d* (1) (a) (ii) above. (ii) Necessary additional ponton bridge units from GHQ. (iii) Practicability of supply and evacuation through Washington by water.

Academic Notes C. & G.S.S.

7. A Solution of Second Requirement.

FORM B

Locations	*Locations and Alternate Locations Recommended by Corps Special Staff Officers for the*							
	The Corps Ordnance Officer		*The Corps Quartermaster*		*The Corps Surgeon*		*The Corps Engineer*	
	Recommendations	*Alternate Recommendations*	*Recommendations*	*Alternate Recommendations*	*Recommendations*	*Alternate Recommendations*	*Recommendations*	
Gaither (375-695)			Railhead 1st Div, Railhead 2d Div				Engineer Depot	
Hoods Mill (370-690)			Railhead 3d Div, Railhead Corps Troops	Railhead 1st Div, Railhead 2d Div				
Woodbine (365-695)	Ammunition Depot			Railhead 3d Div, Railhead Corps Troops	Medical Depot, Evacuation Hospitals			
Watersville (365-695)			G & O Railhead					
Mount Airy (360-695)		Ammunition Depot	Remount Depot			Medical Depot, Evacuation Hospitals		
Mount Airy Junc (355-695)	Ordnance Depot		QM Depot, Railhead Corps Troops	Remount Depot	Veterinary Evacuation Hospital			
Bartholows (350-695)				G & O Railhead				
Monrovia (350-695)		Ordnance Depot		QM Depot, Railhead Corps Troops		Veterinary Evacuation Hospital		

...ps on Baltimore

Corps Officer	*The Corps Chemical Officer*		*Actions taken with brief reasons therefor by G-4, I Corps, on the recommendations submitted by the Corps Special Staff Officers for the locations of supply and evacuation establishments for the attack of the I Corps on Baltimore.*	
Alternate Recommendations	*Recommendations*	*Alternate Recommendations*	*Indicate below opposite each town, the supply and evacuation establishments which are to be located there:*	*Indicate below brief reasons why the recommendations of Special Staff Officers were approved or disapproved:*
			Railhead 1st Division Railhead 2d Division	Railheads most convenient to troops served. Due to limited rail facilities in area and road net it is desirable to group Engineer Depot with Ammunition Depot.
	Chemical Depot		Railhead 3d Division Railhead Corps Troops	Railheads most convenient to troops served. Unnecessarily far forward for Chemical Depot. More convenient to group Chemical Depot with Quartermaster and Ordnance Depots.
		Chemical Depot	Ammunition Depot Engineer Depot	Ammunition Depot should have first priority as to location. Ample rail and road facilities for both Ammunition and Engineer Depots. Location most convenient to serve entire corps.
			G & O Railhead	Suitable location and does not interfere with other activities.
			Evac Hospitals Medical Depot Signal Depot	Suitable location for Evacuation Hospitals and Medical Depot and as far forward as rail and road facilities and other priorities will permit. Signal Depot most convenient to Corps Command Post.
Signal Depot			Remount Depot Vet Evac Hospital	Ordnance Depot grouped with other depots. Remount Depot and Veterinary Evacuation Hospital as far forward as rail facilities and other priorities will permit. These two installations can be conveniently located together.
			QM Depot Ord Depot Cml Depot Railhead Corps Troops	A suitable location. As far forward as other priorities will permit. Depots more convenient as grouped. Railhead for corps troops to take care of corps troops in rear area.

SECTION V

Discussion

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The general plan of supply and evacuation	8
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Alternatives considered by G-4 to meet each contingency	10
Steps taken by G-4 in furtherance of contingent plans	11
Location of railheads and corps installations for the attack on Baltimore	12

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8. THE GENERAL PLAN OF SUPPLY AND EVACUATION.—*a.* The general plan of supply and evacuation for the I Corps for the advance on Baltimore is based: on the commander's tactical plan; instructions from higher echelons of command and supply; status of supply of the I Corps upon completion of the concentration; available lines of communication; probable reaction of the enemy; and the fact that there will be a defile in rear of the I Corps where supply and evacuation of the I Corps may be interrupted.

b. The plan for the supply of the I Corps will necessarily have to be general at this time but should include the following:

(1) Rail lines of communication.

(2) Method of supply and evacuation, and where possible, general location of installations to serve the I Corps.

(3) Amount of battle reserves to be maintained north of the Potomac River.

c. (1) *Rail lines of communication.*—To facilitate the supply of the I Corps two rail lines of communications should be used initially; the B and O Railroad through Washington; and the B and O Railroad through Harpers Ferry and Frederick Junction and east towards Baltimore. The use of the NC Railroad to Keymar and the WM Railroad east thereof towards Baltimore not only increases considerably the amount of railroad to be maintained, but they are not suitably located as the B and O Railroad east of Frederick Junction to serve elements of the I Corps advancing through Washington.

(2) *Method of supply and evacuation.*—(a) The bulk of the I Corps is to advance through Washington, and it is probable that the bulk of the Red force in the Baltimore area will move to the south to oppose this advance. Little opposition to the advance of the 3d Division and the 1st Cavalry Brigade is expected.

In determining the general area for the location of supply and evacuation establishments north of the Potomac River, G-4 has to decide between conflicting considerations.

It is desirable to so locate installations during the advance that they can serve the bulk of the corps during the advance, and also serve the corps during the attack on Baltimore.

To locate the supply and evacuation installations to facilitate the operations of the bulk of the corps during the advance would place them on the B and O Railroad through Washington.

To locate the supply and evacuation installations so that they can serve the bulk of the corps during its attack on Baltimore would place them on the B and O Railroad through Harpers Ferry and Frederick Junction.

To locate these installations early during the advance, on the B and O Railroad through Harpers Ferry and Frederick Junction, would place them so far to the rear that they would be inconvenient to all elements of the corps during the advance and attack on Baltimore, and they would be more vulnerable to hostile raids.

As the bulk of the corps advancing through Washington will probably encounter heavy resistance and will require large quantities of supplies during the advance, the location of supply and evacuation installations in Washington and northeast thereof will facilitate operations and also permit bringing supplies farther forward in the area at an early time.

G-4 then decides to locate initially the bulk of the supply and evacuation installations in Washington and northeast thereof, holding stocks in depots to a minimum, and later to change the principal line of communications to the B and O Railroad through Harpers Ferry and Frederick Junction for the attack on Baltimore.

Evacuation initially for the bulk of the corps will be effected to evacuation hospitals in Washington. Evacuation of the 3d Division and the 1st Cavalry Brigade will be made initially to evacuation installations in the concentration area, later to an evacuation hospital in Frederick.

(b) As it is expected that the 3d Division and the 1st Cavalry Brigade will advance rapidly, their supply should be initially through railheads.

(c) To simplify supply, Class I supply should be on a daily automatic basis.

(3) *Battle reserves.*—The general plan should include the amount of reserves to be moved into the area north of the Potomac River. Considering the amount of ammunition carried with the corps, the two rail lines of communications, the proximity of the corps zone of action to lateral rail lines south of the Potomac River, and the highway bridges available, battle reserves of ammunition sufficient for one or two days of attack of a position would ordinarily be sufficient. However, the possibility of an interruption of our lines of communication makes it advisable to bring into the corps area ammunition sufficient for three days of attack of a position. The three days of operation of Class II, III and IV supplies (less ammunition) should be amply sufficient, as these supplies do not have as direct a bearing on operations as does ammunition. It is not deemed necessary to maintain battle reserves of Class I supplies for the bulk of the I Corps north of the Potomac because of the amounts carried within the corps, but one day railhead reserve of these supplies is not considered excessive. The bulk of the battle reserves maintained north of the Potomac River should be held mobile on trains to permit their advance to locations most convenient for the troops in accordance with the situation.

The 3d Division and 1st Cavalry Brigade are to be supplied through railheads. To provide for a possibility of a break in their line of communications before they can be supplied conveniently from installations northeast of Washington, a reserve of Class I supplies and ammunition should be held mobile on trains.

9. CONTINGENCIES CONSIDERED BY G-4.—Contingencies resulting from enemy activity, which should be considered by G-4, which might require major changes in the supply and evacuation of the I Corps after it has crossed the Potomac River and prior to the attack on Baltimore should include:

a. Interruption of either or both rail lines of communication.

b. Interruption of either or both rail lines of communication and damage to part or all of the highway bridges over the Potomac River.

10. ALTERNATIVES CONSIDERED BY G-4 TO MEET EACH CONTINGENCY.—In order to be able to supply and evacuate the I Corps after it crosses the Potomac River under any eventuality, G-4 must consider plans to meet contingencies which might cause major changes in the general plan of supply and

evacuation. Plans should be considered for each of these contingencies and should include:

a. Provision for using alternative rail lines of communications for the elements of the I Corps advancing through Washington and Harpers Ferry and Point of Rocks.

b. Provision for supply and evacuation of elements of the I Corps through railheads, depots, and evacuation installations located south of the Potomac River, utilizing motor transportation and the highway bridges or if necessary, existing ferries, if practicable, and ponton bridges.

c. Provision for utilizing water transportation via Chesapeake Bay and Potomac River to supplement or replace land lines of communication if investigation shows this method to be practicable.

11. STEPS TAKEN BY G-4 IN FURTHERANCE OF CONTINGENT PLANS.—Having considered plans to meet the various contingencies, it is necessary for G-4 to take action to determine whether these contingent plans are feasible and can be executed, and to facilitate and expedite the change from present plan to contingent plans if necessary.

This action should include for each contingent plan:

a. Subjects of special reports required of special staff officers.—(1) The selection of suitable locations for railheads and supply and evacuation installations. Specific locations can be selected south of the Potomac River during the concentration. Locations north of the Potomac River will necessarily be general and must depend on the situation at the time.

(2) What additional trucks, ambulances, and labor will be required.

(3) The location of construction material which can be used to repair lines of communication.

(4) Where the contingent plan provides for the use of ferries and ponton bridges, the practicability of use of ferries and capacities of these ferries should be determined, and suitable locations for ponton bridges selected.

b. Necessary arrangements with higher echelons of command and supply.—To determine what assistance can be expected from higher echelons in furtherance of his contingent plans, G-4 will want to know what additional trucks, ambulances, labor, and ponton units will be available from GHQ and to make arrangements so that he can secure them, if necessary, on short

notice. G-4 will also assure himself that GHQ will take prompt steps to repair lines of communication if they are damaged.

Washington having certain water terminal facilities, G-4 would also discuss with GHQ the feasibility of supplying the I Corps by water through Washington in event all land lines of communication are damaged.

12. LOCATION OF RAILHEADS AND CORPS INSTALLATIONS FOR THE ATTACK ON BALTIMORE.—*a.* G-4 has already tentatively decided in his general plan made prior to the concentration, to locate the bulk of the railheads and supply and evacuation establishments on the B and O Railroad running east from Frederick Junction for the attack on Baltimore, retaining on the B and O Railroad northeast of Washington an ammunition and an engineer depot, an evacuation hospital, and railheads to serve units on the south flank of the corps. Due to interruption of rail traffic over the Potomac River by retreating Red border guards and the necessity of moving all supplies north of the Potomac River by truck, present depots have been continued in use and it has been impossible to accumulate sufficient supplies north of the river for three days of operations as planned. With the repair of the railroad bridges completed on the night 18-19 April, G-4 has made plans for shifting part of his supply and evacuation installations to the B and O Railroad east of Frederick Junction for the attack on Baltimore. The special staff officers have made reconnaissances of this area, and formulated plans for the location of the bulk of their installations on the B and O Railroad east of Frederick Junction, leaving some on the B and O Railroad through Washington to serve elements of the corps south of Baltimore. Stocks in the present depots are such that they can be practically exhausted by issue to troops prior to the attack on Baltimore, and such as cannot be exhausted by that time will be held with small detachments of depot troops to serve the 1st Division.

b. With the destruction of all bridges at Washington on the morning of 19 April it becomes imperative that this plan for a change in lines of communication be made effective immediately, that all corps installations be moved to the new line, and stocking of depots started. As all establishments are now to be located west of Sykesville a slight readjustment of the tentative plans of special staff officers will be necessary before they can make their recommendations to G-4.

c. Upon receiving the recommendations of the special staff officers, G-4 will endeavor to follow their recommendations, but must consider the problem of supply and evacuation as a whole rather than from the point of view of any particular service, and adjust conflicting recommendations. Prior to approving or disapproving recommendations for locations, he must decide on those installations having priority of location for the attack. Priorities in this situation are:

(1) Ammunition depot.
(2) Evacuation hospitals and engineer depot.
(3) Veterinary evacuation hospitals and railheads.
(4) Other depots.

d. As railheads do not require the large rail siding capacities that other installations require, and can well be farther forward, there is little conflict here. The corps quartermaster has considered recommendations from divisions and recommends locations of railheads with a view to convenience for the troops served. One railhead should be located for each division and two for corps troops.

e. Unless some installations are located unnecessarily far to the rear it is necessary to group some of them. Thus the engineer depot can be at the same location as the ammunition depot, since it carries largely explosives and construction material.

The veterinary evacuation hospital and the remount depot may well be grouped, so that railroad cars bringing in remounts can take out wounded animals. However, as wounded animals cannot make a long march without frequent rests it is desirable to have the veterinary evacuation well forward and convenient for the bulk of the animal casualties.

Quartermaster, ordnance, and chemical depots may well be grouped, if not too large and facilities are adequate.

The medical depot should be located convenient to the evacuation hospitals.

The signal depot should be located on the railroad convenient to the corps command post.

The gasoline and oil railhead should not be located in the same town as other establishments unless the town is large enough to permit its separation from other establishments by a considerable distance.

THE TACTICAL EMPLOYMENT OF ANTIAIRCRAFT ARTILLERY IN THE INDEPENDENT DIVISION AND CORPS

(Tentative)

(1937)

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CHAPTER 4

PROTECTION OF MOVEMENTS

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SECTION I

General Considerations

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Relative danger of discovery of day and night movements	28
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25. SCOPE OF THE DISCUSSION.—The movements discussed in this chapter may be either the movement of troops or supplies, by marching or by motor. The protection of temporarily halted or temporarily massed troops is subject to the same considerations as movements due to the equal bearing of the time factors on them. (See paragraph 27.) The protection of rail movements and the protection of all movements by passive measures is covered in the text *Antiaircraft Defense*, C&GSS, 1937. The movements that will require protection by antiaircraft artillery are those which cannot be protected adequately by their organic weapons or by the use of passive measures.

26. THE AIR PROBLEM IN THE ATTACK OF MOVEMENTS.—A movement, to be attacked, should present a sufficient mass so that the probable effects of the attack will warrant the possible cost. It must first be discovered, information sent to the combat aviation, the future position of the moving column predicted, the attack planned on the map, and finally, after take-off, assembly, and flight to an initial point near the predicted position, the attack delivered. In a daylight attack, the moving columns can be divided into sections of suitable size for the

attacking planes or flights and a simultaneous attack made on the entire movement. At night, only delaying or harassing attacks, at intervals, can be made.

27. THE TIME FACTOR IN THE ATTACK OF MOVEMENTS.—*a. The three air situations with respect to the time factor.*—To estimate the time that will elapse between the discovery of a movement and the delivery of an attack on it, three different air situations should be considered. First, the normal situation, in which the combat aviation is on its base airdromes from 125 to 200 miles from the front; second, when the combat aviation has moved forward to auxiliary airdromes from 15 to 50 miles from the front; and third, when the combat aviation follows the observation aviation in the air after a short time interval.

b. The time factor when combat aviation is on its base airdromes.—When combat aviation is on base airdromes, an attack cannot be made until from two to three hours has elapsed after the discovery of the movement. This results from the time required to receive information, for planning the attack and issue of orders, taking off and assembling at an assembling point, flight to an initial point, and separation into elements for delivery of the attack. It is apparent from consideration of this factor that a movement which can be completed in less than three hours is not in great danger of attack by combat aviation when it is known that hostile combat aviation is on its base airdromes. Whether or not such a movement could be attacked would depend upon how soon after its commencement it had been discovered. In planning the protection of movements, the decision to provide or deny antiaircraft artillery defense will depend upon the estimate of the time factors involved. Consideration of the time element also indicates the value of rapid motor movements to avoid attack.

c. The time factor when combat aviation is on auxiliary airdromes.—When the combat aviation has moved forward to auxiliary airdromes to await information from observation aviation, the time factor between discovery and attack on a movement is reduced to from one to two hours. Combat aviation will not be held habitually on auxiliary airdromes close to the front. To do so, would subject it to attack by the opposing aviation. It will move forward on occasions when, for example, a concentration from which movements are to be expected has been discovered, and there is a reasonable certainty that an important target will be presented. Such occasions should be

known to the friendly aviation and they should be prepared to attack the hostile aviation if discovered on forward airdromes.

d. The time factor when observation aviation immediately preceded combat aviation.—On occasions when combat aviation has been ordered to prevent movements for a limited time within a definite area, it may be preceded in the air by observation aviation by a short time interval, and an attack launched shortly after the discovery of the movement. Such occasions will be rare, since they will frequently lead to futile and costly flights without any assurance of compensating results.

28. RELATIVE DANGER OF DISCOVERY OF DAY AND NIGHT MOVEMENTS.—At night, the observation plane can observe within the relatively small area illuminated by its flares. The visible area at a single point in the daytime may be one hundred times as great. The relative danger of discovery of a night movement is thus lessened to a very great degree. This factor, together with the lessened force of a night attack will influence the allotment of antiaircraft artillery means for the protection of short night movements and night movements made in rear areas.

29. THE DISTANCE FACTOR IN THE ATTACK OF MOVEMENTS.—The farther from the front movements are made, the greater is the area which must be observed to discover them. Within the combat area of a corps to a depth of fifty miles, for example, there might be from three hundred to six hundred miles of roads to be observed. Observation of an area of this extent at more or less frequent intervals is within the capabilities of the observation aviation of the forces in the field. If the area to be observed were extended back another one hundred miles and the base expanded in proportion to its depth, the road net would be increased to from four thousand to eight thousand miles. It is obvious that any normally available amount of observation aviation would not be able to keep such an area under surveillance. The discovery, in distant rear areas, of small movements in the daytime and of large movements at night would be fortuitous. Except under unusual conditions of a very limited road net, antiaircraft artillery protection of movements in areas distant to the rear need not be furnished if the movements are made with proper employment of dispersion and passive measures of protection. An exception to this is represented in case of pronounced bottlenecks in the highway system and of defiles such as mountain passes and bridges. No exact distance can be given within which certain types of movement need protec-

tion or can be considered as having a small probability of being observed or attacked. The zone of relative safety, considered in connection with passive measures and dispersion, will vary widely but may commence at from sixty to eighty miles from the front lines.

30. ASSUMPTIONS MADE FOR THE SUCCEEDING DISCUSSION OF MOVEMENTS.—In the discussion of protection of movements which follows, it is assumed that the movements cannot be made in small groups, that dispersed marching is impracticable, that defense by passive means is not completely effective, that the march will be under way long enough to require protection and that it will be made within the zone in which air attacks are reasonably possible. Every means, other than antiaircraft artillery, should be used to the greatest possible extent for protection; the antiaircraft artillery then can be used as the final resource to stop the gaps in protection that cannot otherwise be filled.

SECTION II

Protection of Movements of Foot and Animal Elements

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31. GENERAL CONSIDERATIONS.—Columns of foot and animal elements afford the ideal target for attack by low-flying aviation. Their mass makes them visible at great distances. Their rate of march is so slow that, once they have been discovered, they will not be lost. It takes but five minutes for the airplane to fly over the entire route of a day's march of foot troops. Even though they are not observed continuously, an examination of the terrain will show where they are concealed if they have left the road between observation flights. Their rate of march is uniform and permits prediction of their future position with sufficient accuracy for the needs of aviation planning and attack.

32. PROTECTION AGAINST OBSERVATION AVIATION IN DAYLIGHT.—*a. Gun defense.*—(1) Movements of foot and animal

elements in daylight present a target of such size and visibility that complete protection against observation aviation is ordinarily impossible. A column of foot troops and vehicles can under favorable conditions be seen in clear weather at an altitude of 10,000 feet from ten miles to the flank. But at such distances, it is impossible to distinguish between the different elements of the column. The protection of a daylight movement by antiaircraft artillery thus resolves itself into a problem, not of complete protection, but of sufficient protection to prevent discovery of the size and composition of the column.

(2) Three general methods of employment of gun defense will be considered, their choice depending on the amount of antiaircraft artillery available:

(a) A dispersed defense over a wide spread area on both flanks of the movement which will cover completely the entire movement. The batteries in rear will successively move forward as the column clears.

(b) A similar defense using a single line of batteries.

(c) A defense at the start and finish of the march, together with defense at one or two points en route.

(3) The first available method will require more antiaircraft weapons than ordinarily will be available to the division and corps. It can succeed in preventing any observation of the movement, but the presence of such a strong defense of the movement will indicate that one is taking place. The emplacement of the batteries will follow the principles given in paragraph 20 *a* (1).

(4) The second method will deny observation close enough to the march to permit the discovery of details of the composition of the columns. It will make observation hazardous since the location of the batteries is constantly being changed and planes will unintentionally come under fire.

(5) The limited amount of matériel available usually will force the adoption of the third method. Defense is provided at the outset of the movement because the preparations for movement frequently cause massing of the troops and also to deny observation of the prospective movement as long as possible. At the end of the movement, a certain amount of unavoidable massing may take place. It is likewise important to deny observation of detailed dispositions in bivouacs to prevent night attacks, or to prohibit the hostile observation from forecasting the routes to be followed when the march is resumed. The dif-

ference in rate of march of the antiaircraft artillery and foot and animal elements permits the antiaircraft artillery to set up and defend one or two areas along the route of march. Too frequent moves will keep the battery out of action too long and decrease unduly the protection it can furnish. Areas selected for defense en route should be those along which concealment furnished by woods and other terrain features is least effective. When it is necessary to furnish protection of a movement against bombardment aviation, which might be used to attack a movement through defiles, this will take precedence over protection against observation in the choice of the locality to be protected. The effect of this (the third) method of protection is to make observation difficult and costly. The movement of the batteries from point to point will keep the hostile observation uncertain about the points from which they may be fired upon. The general result will be to force them to observe cautiously and from a distance. The routes of movement should be checked by friendly observation to determine the points where protection is needed most.

b. Machine-gun defense.—The primary mission of antiaircraft artillery machine guns during movements in daylight will be protection against attack aviation. This mission ordinarily will require the use of all available weapons. If any are available for use primarily against observation, their employment will follow the same general principles as for gun protection. They should be used on the flanks of the columns and the organic weapons with the troops should be depended upon for close-in protection of the column itself. When the column has no organic weapons, some antiaircraft artillery machine guns will have to march in the column. A platoon (four guns) of antiaircraft artillery machine guns can protect from 2000 to 3000 yards of march column.

33. PROTECTION AGAINST OBSERVATION AVIATION IN DARKNESS.—*a. Gun defense.*—The limited visibility afforded the observer in darkness simplifies the problem of protection. The same methods and principles of protection employed in daylight are applicable in darkness except that the area to be defended is much reduced. When the route of movement affords partial concealment and when visibility is poor at night, gun fire should be used with care. Fire should not be opened unless there is reasonable certainty that the movement has been discovered or, from the location of the flares, that it will be. Protection of the

start and end of the movement are more important than protection of points en route. The use of searchlights for deception should always be considered in connection with movements along routes and under conditions which afford partial concealment. Searchlights alone can confuse and may drive off hostile planes. The observer cannot see down through the rays of the searchlights and as long as he is covered by them he is unable to observe.

b. Machine-gun defense.—Antiaircraft artillery machine guns are the most effective positive defensive means of protection against observation at night; since they are also the most important active defensive means against attack, the fulfillment of both missions must be considered as a single problem. Lack of means will usually cause a compromise between the needs of the two missions. The limited area covered by flares and the limited visibility at night permit effective defense when the machine guns are placed in the columns, move on nearby roads, or defend from successive points along the march. Troops are not supplied at present with sufficient transport to have their organic weapons set up on trucks or trailers ready to fire; they must have warning. The antiaircraft artillery machine guns move set up ready to fire. Movements with the columns will have to be adopted when the number of weapons is limited, when organic antiaircraft weapons are lacking, and when there are no parallel roads. When the movement is well supplied with organic antiaircraft weapons, the antiaircraft artillery guns can move by parallel roads or by short bounds from point to point, serving, by their fire, to deceive or halt the activities of the observation and to give warning of its approach. Extreme care should be used not to fire unless there is reasonable certainty that the movement has been or is about to be discovered. This can be determined by the location of the flare and the actions of the observing plane.

34. PROTECTION AGAINST ATTACK AVIATION IN DAYLIGHT.—This defense will be furnished by machine guns. It will not be effective unless the attack is broken up before it reaches the column. [See paragraph 8 *c* (2).] Air attacks will be planned to take place, if possible, when the columns are passing through defiles along routes of march. At such points, dispersion to minimize the effect of the attack is difficult and the greatest delay and destruction can be obtained. The organic weapons of the troops should furnish the close defense of the columns

while the antiaircraft artillery machine guns are used on the flanks in accordance with the methods given in paragraph 22 *b* (3). Since an attack usually cannot be made until two or three hours after the march has started, protection need not be furnished for defiles which will be cleared within that period. When possible, the antiaircraft artillery machine guns should move parallel to the column on close, parallel roads. When this cannot be done, they can move by bounds and cover the march from positions on the flanks.

35. PROTECTION AGAINST ATTACK AVIATION IN DARKNESS.—This defense will be furnished by machine guns. The object of air attack at night is to obtain delay by forcing troops to halt and disperse. The attacks will be repeated at intervals during a period of several hours so that, as soon as the march is resumed after one attack, it will be interrupted by another. The maximum delay and confusion will be obtained if the attacks are made on the heads of the columns. Close defense of the columns will be effective. The antiaircraft artillery machine guns should be distributed throughout the column, but the distribution should give the maximum protection to the forward portion and increased protection for elements without organic antiaircraft weapons. Special terrain conditions which favor attack from a flank, or knowledge of the habitual direction of attack, should be taken into consideration and, if desirable, protection provided toward the indicated flank. The requirements for protection against observation aviation and attack aviation should be carefully coordinated.

36. PROTECTION AGAINST BOMBARDMENT AVIATION.—The use of bombardment aviation to attack movements will be infrequent. It ordinarily will not be necessary to plan for it. The protection afforded against observation aviation in daylight will furnish incidental protection against bombardment and should make bombardment attacks too costly in proportion to the results to be expected to warrant such attacks. Occasions when bombardment aviation might be used are: when no attack aviation is available; when passing through defiles; or, when the urgency is great, as for the delay of pursuing columns, reinforcements, or a retreat. Movements will present too small a target for effective night bombing operations.

SECTION III

Protection of Motor Movements

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Protection against bombardment aviation	41

37. GENERAL CONSIDERATIONS.—The small difference in speed between motor movements and the movement of antiaircraft artillery renders defense of successive localities along the route of march impossible. If the column passes through a long defile several hours after the march starts, this defile may be defended, either by sending the antiaircraft artillery ahead of the column or by moving it to the defile on parallel roads. The variable speed of motor movements and the larger choice of road net for longer movements, make prediction of arrival at a definite point difficult for the hostile aviation and thus serve to lessen the probability of attack while passing through short defiles.

38. PLANNING MOTOR MOVEMENTS WITH A VIEW TO PROTECTION.—Motors can be concealed best in cities, buildings, or heavily wooded areas. The movement should start and end at places where such concealment is found. Advantage should be taken of the two or three hours delay factor between discovery of the movement and possible attack and the marches or stages arranged, when practicable, so that they will not greatly exceed this time-length. If the movement is long, it can be broken into stages of not to exceed four hours and stops made in areas where it can be concealed long enough to disrupt the plans of combat aviation. Advantage can be taken of these stops for servicing, meals, etc. With time-distances between stops exceeding two hours, the antiaircraft artillery frequently can displace rapidly enough to defend both the starting and ending areas of the movement. The conditions under which this cannot be done will be due either to great length of columns or an unfavorable road net. When the antiaircraft artillery cannot protect the bivouacs at both the start and end of the march by more rapid displacement, it either will have to be divided and one part precede the march to the next staging area, or protect only the starting area or the ending. Short motor movements are much more difficult to discover from the air than movements

for the same distance by marching. This is due to the short time required for completion of the motor movement. From the standpoint both of secrecy and protection, they are much to be preferred to foot marches for all troop movements. For example, the foot troops of an infantry division can be moved fifteen miles by its organic motor transport in seven hours, making four trips at an average speed of twenty miles an hour. If such a movement were made in small motor columns and by all available roads, the discovery by hostile aviation of the size of the movement would be unlikely and attacks on it improbable; whereas the same movement by marching would find all the troops on roads for an equal period with certainty that the hostile aviation would discover the size of the movement and the bivouac at which it ended, and would have ample time to prepare and launch an attack on it. It often will be advisable to make motor movements of forty to sixty miles at night at increased speeds with dim lights on a portion of the vehicles to take advantage of the delay factor between observation and attack. Movements of supplies made at the same hour day after day invite attack. The time should be varied from day to day.

39. PROTECTION AGAINST OBSERVATION AVIATION.—*a. Gun defense.*—Gun defense should be provided for the start and completion of the movement. When the start of the movement is protected, delayed discovery of it will serve to prevent attack. Protection of the completion of the movement will prevent the enemy from knowing where it ends and thus make it difficult for them to observe the area to discover the start of the next stage. When, on account of road conditions or the length of the columns, it is impracticable to defend both the start and the end of the movement, it will be preferable to protect daylight movements at the point of completion. At night, it usually will be preferable to keep the gun batteries in the starting area where they can be used to aid in deception; this is especially applicable if the general area from which the movement is made is known by the enemy to be occupied. When movements are completed close to the enemy, the area in which they are completed should always be protected during daylight. For movements over long distances, defense can be established at intervals of several hours. The most important points to defend in this case will be road junctions where a change of direction is possible. This may serve to prevent prediction of the future posi-

tion of the column for the planning of an attack by combat aviation. The protection provided for localities for motor movements will be established in accordance with the principles stated in paragraph 20 *a* (1) for the protection of stationary troops. The same considerations apply for the protection of both day and night movements.

b. Machine-gun defense.—The primary mission of the antiaircraft artillery machine guns will be to protect the movement from attack aviation. The arrangements made for protection against attack will serve against observation. See paragraph 40 *b*.

40. PROTECTION AGAINST ATTACK AVIATION.—*a. Gun defense.*—Gun defense will not be effective against the attack of a motor movement by attack aviation.

b. Machine-gun defense.—Antiaircraft artillery machine guns, set up on trucks, will usually be distributed throughout the column. The antiaircraft artillery machine guns should be placed by sections in the march columns. A platoon can protect from 2000 to 3000 yards of column. Preference in assignment should be given to the leading portion of the column. The presence of organic weapons should also be taken into consideration. However, the organic weapons, as transported at present, cannot open fire without several minutes' warning, so units with organic weapons should be reinforced with antiaircraft artillery machine guns. On long motor movements, warning will often be uncertain; consequently a sufficient number of antiaircraft machine guns should be assigned to the movement to protect the entire column even though it is supplied with organic weapons. Defiles which will be cleared within two or three hours after the outset of the movement can be disregarded as to special defensive measures; but long defiles more than two or three hours distance from the start of the movement should be given special protection. Where these exist, they should be protected, in daylight, in the manner described in paragraph 22 *b* (3). Since a mass attack cannot be made in darkness against one point, the special defense of defiles, in darkness, is not as important as in daylight. It is always preferable to furnish protection for the column together with a special defense for the defile area; this should be done when the amount of matériel permits.

41. PROTECTION AGAINST BOMBARDMENT AVIATION.—The occasions when protection of motor movements against bom-

bardment aviation is needed will be infrequent. Protection is difficult and will follow the principles for protection against observation stated in paragraph 39 *a* with special attention to defiles. The special occasions when such protection may be required will be brought out later in the discussion of protection of various types of tactical operations.

TACTICAL EMPLOYMENT OF FIELD ARTILLERY 1936

THE COMMAND AND GENERAL STAFF SCHOOL
FORT LEAVENWORTH, KANSAS
15 April, 1937

CHANGES
No. 1

Tactical Employment of Field Artillery, 1936, is changed as follows:

Page 6, paragraph 2:

Subparagraph *b*, line 3: *delete* Table 54.
Subparagraph *b*, line 4: *delete* 1936.

Page 7, paragraph 3:

Subparagraph *b*, line 9: to *read:* its power and range are greater. Medium artil-.

Page 11, paragraph 7:

Subparagraph *d*, first line: *to read: d. Reinforcing fires.*—An artillery unit, either in general or direct support, may be given.

Page 15, paragraph 12:

Subparagraph *a*: after last sentence, *add:* At times a particular fire mission is of such importance to the force commander as to warrant its inclusion in the artillery paragraph of the force order.

Subparagraph *b*: *to read:*

b. This chapter, which deals with *Tactical Fires,* furnishes general information as to the nature of *fire missions.* In appropriate parts of the remainder of this text information is furnished as to the employment of artillery fire as *special missions.* These *special missions* are fires requested or ordered by proper authority to secure the accomplishment of vital artillery assistance to the other arms.

Page 18, paragraph 14:

Subparagraph *b* (3), line 3: firing *to read* accuracy of fire.

Page 21, paragraph 15:

Subparagraph *b* (2) (b), line 8: with division artillery *to read* with organic division artillery.

Page 22, paragraph 16:

Subparagraph *b* (1): first two sentences, *to read:* The term artillery preparation is used to designate fire delivered prior to the advance of the infantry, the purpose of the fire being to facilitate the subsequent advance of the infantry.

Page 38, paragraph 28:

Subparagraph *c*, last line at bottom of page: 2000 *to read* 1500; 6000 *to read* 7000.

Page 39, paragraph 28:

Subparagraph *c*: after subparagraph (2), *add the following unnumbered subparagraph:*

The locations of artillery positions in various situations, both offensive and defensive, are given specifically in pars. 68, 91, 107, 164, 195, 223, and 234.

Page 40, paragraph 32:

Subparagraph *b*: first sentence, *to read:* Each artillery headquarters, from the brigade to the battalion, inclusive, has approximately six (6) miles of wire. Batteries carry approximately three and one-half (3½) miles, each.

Page 41, paragraph 35:

Subparagraph *b*: *to read:*

b. Light artillery.—The division light artillery regiments maintain officers on duty at the command posts of the supported infantry units and liaison sections with front-line battalions.

Subparagraph *c*: *to read:*

c. Medium artillery.—The division medium artillery normally establishes liaison with those light artillery units, which are in direct support, and which have normal zones within that of the medium artillery concerned. It rarely establishes liaison directly with infantry units.

Page 51, paragraph 40:

Line 3: *delete* 1936.

Page 52, paragraph 42:

Line 4: *delete* 1936.

Page 54, paragraph 43:

Lines 5 to 8: *to read:*

Two light (75-mm. gun) regiments, each of two battalions of three four-gun batteries.
One howitzer (155-mm.) regiment of three battalions of two four-howitzer batteries.

Page 55, paragraph 45:

Line 6: *delete* escort-.

Page 56, paragraph 46:

Subparagraph *a*, line 2: *delete* Part C.

Subparagraph *a*, line 3: *delete* 1936.

Subparagraph *b* (1): first sentence, *to read:* There is no fixed rule for the marching of artillery; the commander marches it and assigns it to columns in accordance with the use he expects to make of it.

Page 59, Figure 6:

Delete the sixth note on right-hand side of page: Infantry field trains.

Delete the last two words, field train, *of the seventh note on right-hand side of page.*

Page 60, Figure 7:

Delete the seventh note on right-hand side of page: Infantry field trains.

Delete the last two words, field trains, *of the eighth note on right-hand side of page.*

Pages 62 and 63, Figures 8 and 9:

Delete last two lines on right-hand side of both pages: Infantry field trains *and* Artillery field trains.

Under notes at bottom of left-hand side of each page add on both pages the following note: The field trains, infantry and field artillery, may follow the combat units of the column, or march with some other column on a different road.

Page 66, paragraph 51:

Subparagraph *a*, line 2: *delete* Part C.

Subparagraph *a*, line 3: *delete* 1936.

Page 70, paragraph 53:

Subparagraph *a*, line 2: *delete* Part C.

Subparagraph *a*, line 3: *delete* 1936.

Page 71, paragraph 57:

Subparagraph *a*, line 2: *delete* Part C.

Subparagraph *a*, line 3: *delete* 1936.

Page 73, paragraph 62:

Subparagraph *a*, line 2: *delete* Part D.

Subparagraph *a*, line 3: *delete* 1936 *and* Part B.

Subparagraph *a*, line 4: *delete* 1936.

Page 76, paragraph 64:

Subparagraph *b*, first line: *delete third word*, the.

Page 80, paragraph 65:

Subparagraph *e* (1), line 8: the infantry *to read* the hostile infantry.

Page 98, paragraph 76:

Subparagraph *c* (1), line 17: *delete entire sentence beginning:* Usually the only reason, *etc.*

Subparagraph *c* (1), line 22: usually *to read* frequently.

Subparagraph *c* (1), line 23: and *to read* so.

Page 111, paragraph 89:

Subparagraph *b*: *add:* The detail in which the employment of the mass of artillery fire can be prescribed by the commander will depend, usually, upon the available knowledge of the terrain and of the hostile capabilities. At times, for example, it may be impracticable for the commander to indicate anything more definite than a general area, such as "in support of the right flank extension" or "south of the line * * *." At other times it may be practicable for the commander to delineate an area, or areas, in which the massing of artillery fire therein will result in the disruption

and disorganization or the canalization of the hostile attack. From the viewpoint of the artillery, it is desirable to have announced as definitely as is practicable the area in which massed fire may be required.

Page 114, paragraph 92:

Subparagraph *a*: first sentence, *to read:* Fire missions may be divided into three natural groups based upon the phases of the action as follows:

Subparagraph *b*, first line: *to read: b. Special missions prior to the hostile attack.*—(1) The ob-

Page 115, paragraph 92:

Subparagraph *c*, first line: *to read: c. Special missions during the hostile attack proper.*—Special.

Subparagraph *d*, first line: *to read: d. Special missions incident to the conduct of the defense.*—

Subparagraph *d*, line 5: Such missions *to read* Such special missions.

Subparagraph *d*, line 6: missions *to read* those.

Page 116, paragraph 93:

Subparagraph *b*, line 16: *delete sixth word,* the.

Page 119, paragraph 99:

Subparagraph *a*: after subparagraph (2), *add:*

(3) The remainder of this paragraph sets forth some methods of disposing the artillery so as to secure this mobile artillery support. It should be borne in mind, however, that these dispositions are suitable for the protection of a vulnerable flank against a hostile attack launched at daylight on the day after contact is gained; and that if the enemy initiates an attack during the day in which contact is gained, the artillery dispositions should be suitable, even though readjustment is necessary, to meet the actual attack which information indicates the enemy to be making.

Page 120, paragraph 99:

Subparagraphs *b* (3) and (4): *to read:*

(3) In other situations, where a study of such factors as the hostile threat, the terrain, and the lines of communication do not indicate to the commander that he must be in

greater readiness for the defense of one flank in preference to the other, it may be advisable to hold two light battalions initially in readiness at a location where routes of advance facilitate prompt movement to either flank. In this case, the units held in readiness must be prepared for prompt movement to positions previously reconnoitered in rear of the flanks. This initial disposition of the artillery is particularly applicable when hostile movements to the flanks or around the flanks are not hampered by natural obstacles.

(4) At times when the commander is unable to decide which flank is more vulnerable, instead of holding a part of the light artillery in readiness initially, it may be advisable to secure early interference with the hostile advance by employing this portion of the artillery initially in temporary forward positions, with preparations made in advance to displace from these temporary positions to battle positions suitable for the defense of either flank. At other times when the commander is unable to decide which flank is more vulnerable, the road net, cover, defilade, and the traffic situation may make it advisable to emplace this portion of the light artillery in rear of one flank, with provisions for prompt movement to the other flank, rather than to hold it initially in readiness. This disposition is suitable only when it can be foreseen that artillery support for either flank can be secured at least as promptly as it could be with the units being held in readiness initially.

Page 122, paragraph 102:

Delete last sentence.

Page 125:

First line: which *to read* with.

Page 126, paragraph 112:

Last line: *delete* below.

Page 127, paragraph 114:

Subparagraph *a*, lines 4 and 6: *delete* below.

Subparagraph *b*: *to read:*

b. In the preparation of the defensive fires the following priorities usually govern:

1st—The standing barrages for the close defense of the main line of resistance.

2d—Fires other than barrages in front of the main line of resistance.

3d—The general counterpreparation.

4th—Fires within the battle position to limit penetrations or envelopments.

5th—Fires in support of counterattacks.

6th—Fires covering a possible withdrawal.

When appropriate, fires to support the action of covering forces should be given a high priority.

Page 134, paragraph 127:

Subparagraph *a*, line 2: *delete* Part B.

Subparagraph *a*, line 3: *delete* 1936.

Page 136, paragraph 130:

Subparagraph *a*, line 2: *delete* Part B.

Subparagraph *a*, line 3: *delete* 1936.

Page 138, paragraph 132:

Subparagraph *b*, line 8: initialed *to read* initiated.

Page 139, paragraph 133:

Subparagraph *a*, line 2: *delete* Part B.

Subparagraph *a*, line 3: *delete* 1936.

Page 139, paragraph 135:

Subparagraph *a*, line 6: to rear *to read* to the rear.

Page 140, paragraph 136:

Subparagraph *a*, line 2: *delete* Part C.

Subparagraph *a*, line 3: *delete* 1936.

Page 142, paragraph 138:

Line 19: habitually *to read* usually.

Page 143, paragraph 143:

Line 2: *delete* Part C.

Line 3: *delete* 1936.

Page 160, paragraph 160:

Line 4: 166½ *to read* 160½.

Line 6: 512 *to read* 506.

Page 166, paragraph 172:

Subparagraph *b*: first sentence, *to read:* While the corps chief of artillery exercises no direct control over the artillery with the divisions, he does in practice influence its employment through his recommendations to the corps commander.

Subparagraph *c* (2), line 3: *delete* including amounts and types.

Page 167, paragraph 172:

Subparagraph *c* (9): *to read:*

(9) *Counterbattery.*—Controls and organizes the counterbattery within the corps.

Subparagraph *c* (12): *delete entire subparagraph.*

Page 167, paragraph 173:

Subparagraph *a*, line 3: and to be prepared to employ *to read* including the employment of.

Page 168, paragraph 174:

Subparagraph *c*, line 1: consists of *to read* contains.

Page 169, paragraph 174:

Subparagraph *d*, line 2: *delete* artillery.

Page 170:

Line 5: *delete* several.

Page 170, paragraph 175:

Delete last sentence.

Page 172, paragraph 177:

Subparagraph *b*, line 4: of *to read* to.

Page 177, paragraph 184:

Subparagraph *b*, *to read:*

b. The sound and flash battalion consists of a headquarters and headquarters battery, and two sound and flash

batteries. (See Figure 12.) The headquarters battery, in addition to performing the usual headquarters functions, operates a battalion survey detachment. The purpose of this survey detachment is to carry forward control points for the use of the batteries, providing basic data which is necessary to the batteries in their topographical work. Each battery consists of a battery headquarters, a flash-ranging platoon, a sound-ranging platoon, a communications platoon, and a maintenance section. After the initial survey by the battalion survey detachment has provided necessary control points for the use of the batteries, the batteries are capable of operating independently. The organization of the flash-ranging platoon and of the sound-ranging platoon is similar. Each consists of an operations section and a topographical section.

Page 180:

First line: favorable *to read* unfavorable.

Page 182, paragraph 188:

Line 3: *to read: Corps and the Corps in the Army,* C. & G. S. School.

Page 183, paragraph 190:

Subparagraph *b,* line 7: Light motors *to read* Motors.

Page 184:

Lines 6 and 7: *delete* pos- sible.

Page 184, paragraph 190:

Subparagraph *e,* line 5: *delete entire sentence beginning:* The shelter of personnel, *etc.*

Page 185, paragraph 190:

Subparagraph *f* (2): first sentence, *to read:* In general, when an offensive is contemplated, the corps artillery regiments are maneuvered so that the main attack will be favored, howitzer regiments normally being disposed for this support.

Page 187, paragraph 191:

Subparagraph *b,* line 4: division *to read* divisions.

Page 191, paragraph 194:

Subparagraph *c*, line 8: *to read:* of the situation on the two corps fronts.

Page 192, paragraph 194:

Subparagraph *g*, line 3: *delete* are *and* expected to.

Page 209, paragraph 207:

Subparagraph *c*, line 3: command, liaison, *to read* command, observation, liaison,.

Page 213, paragraph 219:

Subparagraph *a*, line 8, to missions *to read* to special missions.

Subparagraph *b*, line 2: few missions *to read* few special missions.

Page 214, paragraph 221:

Subparagraph *b*, line 2: of position *to read* of the position.

Page 215, paragraph 222:

Subparagraph *b* (2), line 1: echelon *to read* subdivision.

Page 220, paragraph 232:

Subparagraph *b* (3), line 3: and the *to read* and if the.

Page 222, paragraph 239:

Subparagraph *a*, line 6: these missions *to read* these special missions.

Page 223, paragraph 240:

Subparagraph *a*: *to read:*

240. GENERAL.—*a*. For the general discussion of retirements by a corps, see *The Independent Corps and the Corps in the Army*, C. & G. S. School.

Page 225, paragraph 243:

Subparagraph *b*, line 3: *to read:* corps issues instructions as general as the situation will per-.

Page 225, paragraph 244:

Subparagraph *a*: *to read:*

244. GENERAL.—*a*. For the general discussion of delaying action by a corps, see *The Independent Corps and the Corps in the Army*, C. & G. S. School.

Page 238, paragraph 254:

Subparagraph *g* (4), line 3: flank *to read* flank.

Page 248, Outline for artillery subparagraph:

Subparagraph (4), line 8 *to read: order their accomplishment. The stating of these missions in.*

Subparagraph (6): *delete entire subparagraph.*

Subparagraph (7): (7) *to read* (6).

Third from last line on page: ommitted *to read* omitted.

Page 249, Outline for artillery subparagraph:

Subparagraph (6): *delete entire subparagraph.*

Subparagraph (7): (7) *to read* (6).

Page 250, paragraph 265:

Subparagraph *c*, line 6: desired *to read* recommended.

Page 251, paragraph 265:

Subparagraph *f: delete entire subparagraph.*

Subparagraph *g: g. to read f.*

Page 253, Outline for artillery subparagraph:

Subparagraph (4): *delete entire subparagraph.*

Subparagraph (5): (5) *to read* (4).

Subparagraph (6): (6) *to read* (5).

Page 254, Outline for artillery subparagraph:

Subparagraph (4): *delete entire subparagraph.*

Subparagraph (5): (5) *to read* (4).

Subparagraph (6): (6) *to read* (5).

Page 256:

Artillery preparation definition *to read:*

Artillery preparation (Paragraph 16).—Artillery fire delivered prior to the advance of the infantry, the purpose of the fire being to facilitate the subsequent advance of the infantry.

Page 257:

Concentration definition *to read:*

Concentration (Paragraph 15).—Artillery fire placed on a limited area within a limited time.

Counterpreparation definition *to read:*

Counterpreparation (Paragraph 16).—Artillery fire, in defensive action, delivered prior to the enemy's attack, for the purpose of disrupting the arrangements for the attack and, if practicable, preventing the launching of the attack.

Page 259:

After *In readiness* definition, *add:*

Interdiction fire (Paragraph 16).—Fire delivered for the purpose of preventing or interfering with the use of certain roads or areas by the enemy.

BY DIRECTION OF THE ASSISTANT COMMANDANT:

F. W. MILBURN,
Lieut. Col., Inf.,
Assistant Secretary.

DIRECTORY OF PERIODICALS

Included in this directory are only those periodicals from which articles have been selected.
See also, "List of Periodicals Indexed and Key to Abbreviations."

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Joint Forces

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Revue de Cavalerie (France) 304

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Naval Institute Proceedings 296

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Revista de la Sanidad Militar
Boletín del Centro Naval
El Caballo
Marina
Alas-Tiro y Gimnasia
Ayuda Mutua de Suboficiales

BELGIUM

L'Aviation Belge

BOLIVIA

Revista Militar

BRAZIL

Revista Militar Brasileira
O Tiro de Guerra
Revista do Club Militar
A Defesa Nacionial
Cavalaria

CHILE

Memorial del Ejército
Revista de Marina
Revista del Servicio de Administración Militar
Revista de Infantería
Revista de Caballería
Revista de Artillería
Chile Aéreo

COLOMBIA

Revista Militar del Ejército

CUBA

El Ejército Constitucional
Antiaérea

CZECHOSLOVAKIA
Vojenske-Technique-Zpravy

DOMINICAN REPUBLIC
Revista Militar

ECUADOR
Revista Militar

FRANCE
Revue des Troupes Coloniales
L'Aeronautique
La Revue des Deux Mondes

GERMANY
Reichsverband Deutscher Offiziere

GUATEMALA
Revista Militar

ITALY
Echi e Commenti
Nazione Militare
Rivista di Fanteria

LITHUANIA
Musy Zinyas

MEXICO
Revista Naval Militar

NETHERLANDS
De Militaire Spectator

PARAGUAY
Revista del Ejército y de la Marina

PERÚ
Revista Militar
Revista de Marina
Boletin del Clase
Revista de la Sanidad Militar
Revista de la Escuela Militar de Chorrillos

RUMANIA
Revista Geniului
Revista Infanteriei
Romania Militara

RUSSIA
Krasnaya Zvezda

SPAIN
Revista General de Marina
Memorial de Infantería
Revista Tecnica de Intendencia Militar
Revista de Aeronáutica
Revista de Ingenieros del Ejército

SWEDEN
Krikventenskaps-Akademiens

SWITZERLAND
Schweizerische Monatschrift fuer Offiziere aller Waffen
Allmeigne Schweirzenische

URUGUAY
Revista Militar y Naval

VENEZUELA
Revista del Ejército, Marina y Aeronáutica

CATALOG OF SELECTED PERIODICAL ARTICLES

This section catalogs the articles selected from Library periodicals for the current quarter. Periodicals in this Catalog are arranged alphabetically.

ARMY MEDICAL BULLETIN

July 1937

DIET AND THE ENERVATING EFFECTS OF TROPICAL HEAT. Mills

ARMY ORDNANCE

September-October 1937

MOBILIZATION IN RETROSPECT. WERE THERE LOST INDUSTRIAL OPPORTUNITIES IN THE WORLD WAR? Colonel Scott

LIGHT MACHINE GUNS. THEY SHOULD RECONCILE THE DEMANDS OF MOBILITY AND FIRE POWER. Lieutenant Johnson

WEAPONS AND THE LAW. A NEW MACHINE GUN DISCLOSES FAULTY LEGISLATION. Farley

THE TANKS AT CAMBRAI. THE MAXIMS OF BATTLE ARE NOT CHANGED BY MECHANIZATION. (II) Colonel Wagner

FIELD SERVICE PROBLEMS. Part III. Lieut.Colonel Marsh

November-December 1937

PREPAREDNESS IN ENGLAND. A STUDY OF INDUSTRIAL MOBILIZATION. (I) Major Codd

PROPAGANDA AND WAR. THE NEW TECHNIQUE OF MENDACITY AS A PSYCHOLOGICAL WEAPON. Major General Fuller, British Army

ARTILLERY MOUNTED IN AIRCRAFT (PICTORIAL)

WAR-TIME CONTRACTS. TENTATIVE PLANS FOR PROMPT PRODUCTION AND FAIR PRICES. Major Fenn

ORDNANCE SERVICE IN THE CORPS. Part I. Lieut.Colonel Marsh

ARMY QUARTERLY (Great Britain)

October 1937

THE DEVELOPMENT OF THE GERMAN DEFENSIVE BATTLE IN 1917 AND ITS INFLUENCE ON BRITISH DEFENCE TACTICS. PART III.—"FIELD SERVICE REGULATIONS" (1935). Captain Wynne

THE GERMAN OFFICIAL HISTORY. THE FIRST TWO MONTHS OF THE SOMME

LOST OPPORTUNITIES IN 1915? (II) Major General Bird

DICTATORSHIP AND GENERALSHIP. Major General Fuller

THE RUSSO-JAPANESE WAR UP TO LIAO YANG. Part II. Captain Kirkby

THE BATTLE OF VALMY: A RECONSIDERATION. Part II. Dr. Glover

THE FAILURE OF THE WAR OF EXHAUSTION. Translated from the Italian by Professor Rosinski

A BRITISH LEGION IN SPAIN. Lieut.Colonel Chenevix-Trench

PROTECTION AGAINST CHEMICAL WARFARE. Captain Sadtler, U.S. Army

BULLETIN BELGE DES SCIENCES MILITAIRES (Belgium)

By Captain Wendell G. Johnson, Infantry

April 1937

THE TEN-DAYS CAMPAIGN OF 1831—OPERATIONS IN FLANDERS.

[La Campagne des Dix-Jours: Les opérations dans les flandres.] Colonel Verhaegen

---

THE PNEUMATIC CAISSON OF THE BELGIAN MILITARY AVIATION.

[Le caisson pneumatique de l'Aéronautique militaire belge.] Colonel Sillevaerts

A discussion of apparatus for experimental research into the effects of the human body of various conditions of military flying.

THE OFFICER'S SOCIAL MISSION.

[Le role social de l'officier.] Jean de Vincennes

A discourse on the part which officers play in the development of the young men who pass through their hands while in military service.

THE GERMAN NETWORK OF SUPER HIGHWAYS IN 1936.

[Le réseau d'autostrades du Reich en 1936.]

The Heidelberg—Frankfort highways has registered as high as 12,000 vehicles passing during a 24-hour period. At the end of 1936, 1,088 kilometers of super highway had been built; in 1935, only 108. The network under construction is divided into 15 districts which are subdivided in turn into 81 sections.

(". . . in 1937, some 3,000 kilometers have been scheduled for completion and by 1939 the whole job should be done. More than 250,000 men in the Reich Labor Army have been employed at this work. . . . The new roads are 90 per cent concrete, 5 per cent asphalt, and 4 per cent stone blocks. . . . They are twin speedways—24½ feet wide with 4 to 6 yards of turf between right and left thoroughfares. This interstice in many places has been planted with hedges to stop the glare of headlights. . . . Since the whole network will not be finished for several years and since war may break out tomorrow, the fact that . . . two zones have been completed now is significant. . . . The Leipzig—Bayreuth autobahn . . . draws close to the western end of Czechoslovakia. . . . But Czechoslovakia has an alliance with France. . . . The map indicates that French military assistance to Czechoslovakia would have its focal point in the area between Frankfort and Karlsruhe. And just between these two points another long and carefully constructed section of the autobahnen gives the Reich's motor army an excellent means to stop a French invasion, should it occur to-morrow."—"Current History," May, 1937.)

(". . . On these routes, trucks each carrying 30 men and travelling two abreast at a constant speed of 38 miles an hour and spaced 15 meters apart would make it possible to transport 72,000 men an hour, assuming that half of the trucks were used for material. No more slow embarkations nor tedious stops in railway stations; not even bottle necks are to be feared. The mechanized weapons of the army can be shifted from the right wing to the left, from one theater of operations to another, with a speed unheard of before. The speed of maneuvers can be increased tenfold without increasing in proportion the difficulties of supply."—General Serrigny in "Revue des Deux Mondes.")

A GERMAN GLANCE AT THE MILITARY DURING 1936.
[Commentaires allemands sur l'année militaire 1936.]

Abstract of the "Deutsche Wehr's" survey of military affairs of 1936.

The stopping power of defensive fires is still greater now than during the World War, yet it remains true that only the offensive brings victory.

To say offensive means liberty of movement. Every effort then must be bent toward gaining this liberty by making a judicious employment of new means: gas, armor, motors, airplanes. The conquest of freedom of movement with the new means is really the essence of the current evolution in the art of a warfare whose possibilities we are just beginning to suspect. In spite of the world-wide experimentation toward coordinating these new combat means, no country has evolved any definite tactics. The tendency everywhere is the same: to guarantee continuity of offensive movement.

Infantry remains the most important arm and is becoming the most complex and most interesting of all arms because around it are being grouped all the weapons and machines of modern war.

Prevailing opinion prefers large mixed mechanized units instead of homogeneous tank formations; this points to the possibility of combining fire with movement.

MAINTAINING WATER SUPPLY WHEN WATER WORKS ARE BOMBED.
[Pour remédier au bombardement des usines urbaines distributrices d'eau potable.]

Among the many possibilities which must be thought of in preparing against air attacks on civilian communities, the destruction of the means of water distribution looms large. Open reservoirs make easy targets to find, and they can either be destroyed or contaminated from the air.

This danger has caused several French municipalities to look for means with which to assure a continuance of water supply. One plan under consideration is to establish on the canals and other water courses, special barges with pumping and sterilizing equipment. Having mobility and being susceptible of concealment they would not be readily found or hit by enemy aviation. Some of these barges might also be provided with water reservoirs of a design permitting their removal and shipment by road or rail to required localities.

NEW "NAKADZIMA" PLANES.
[Les nouveaux avions de la fabrique "Nakadzima."]

The Japanese "Nakadzima-I" pursuit plane is copied from the American Boeing pursuit, and has a 550 horsepower air-cooled motor with a three-blade metal prop. This low-wing monoplane climbs to 5,000 meters in six minutes. Its top speed at 14,000 feet is 260 miles per hour. Two Vickers machine guns are mounted to fire through the prop. A radiotelephone is provided in the pilot's cabin.

The "Nakadzima-AT," copy of the Douglas DC-2 and built under license, is a low-wing monoplane carrying a two-man crew and eight passengers. Its two Kotobouki-2 air-cooled motors each develop 460 horsepower. Speeds: maximum, 230 miles per hour; cruising 186 to 217; landing, 59 miles per hour.

THE TWIN-MOTOR MILITARY "FOKKER T-5."
[Le bimoteur militaire "Fokker T.5."]

In the "Fokker T-5" long-distance bomber, movement is possible between the various compartments. Of these, the one in the nose contains a cannon (20-mm) or machine gun, the bomb sight, and the automatic bomb release. Next in rear is the pilot's post, and behind it a machine-gun post for firing upward and to the rear. Here also are located the alternate controls. Farther to the rear a second machine gun can be mounted on the floor for downward fire to the flanks and rear. The occupant of this post

may also serve as radio operator. The tail compartment is so made that the machine gun mounted in it can be fired in all directions toward the rear.

This ship weighs empty 10,570 pounds; with its 5,930-pound payload, 16,500 pounds. It climbs: to 1,000 meters in 3.1 minutes, to 2,000 in 5.9 minutes, to 3,000 in 8.5, to 4,000 in 10.9, to 5,000 in 13.5, to 6,000 meters in 16.9 minutes. Its ceiling is 8,750 meters; its radius of action 930 miles; its cruising speed 220 miles per hour; its maximum speed 262 miles per hour.

THE AUSTRO-DAIMLER ARMORED CAR.
[L'auto blindée lourde "Austro-Daimler."]

The armored car produced by the Austro-Daimler works is an eight-wheel vehicle, with eight-wheel drive. There are two driving seats, one for forward and one for rearward movement. This 12-ton vehicle is powered with a 6-cylinder motor of 150 horsepower, which gives it a top speed of 48 miles per hour. Its 85-gallon gasoline tank permits a radius of action of 280 miles. There are two heavy caliber machine guns (or one 20-mm automatic cannon) and two normal caliber machine guns. The armor is about one-third inch thick. Six to eight men comprise the crew. Otherwise twelve men can be transported.

THE ORGANIZATION AND FUNCTIONING OF THE SANITARY SERVICE IN FOREIGN ARMIES.
[L'organisation et le fonctionnement du Service de Santé dans les armées étrangères.] Major Sabrie, and Pharmacist Kerny

A survey of the sanitary service in the Russian, Swiss, and Yugoslav armies that completes an earlier study covering this service in other armies.

May 1937

OPERATIONS AGAINST THE WINTGENS-NAUMANN COLUMN SOUTH OF THE RAILWAY: KIGOMA—TABORA—DAR-ES-SALAM, 19 TO 26 MAY 1917.
[Opérations contre la colonne Wintgens-Naumann au Sud du rail Kigoma—Dar-es-Salam (mai 1917).] By XXX

Von Lettow's East African troops had been reorganized during the 1916-17 rainy season. British troops encircled the area occupied by the German forces. This loose ring was broken by a column consisting of five or six hundred rifles, some machine guns and two small cannons. This column threatened the Belgian zone of occupation. Against this menace was sent the Murray column detached from the Rhodesian brigade of General Northey. The British and Belgians cooperated in the ensuing operations which turned out to be a fruitless chase.

EXECUTION AND INSTRUCTION OF FENCING AND BAYONET FIGHTING.
[Pratique et enseignement de l'escrime et du combat à la baionette.] Captain Darrien

An outline of a suitable course and the daily instruction procedure.

PHYSICAL CHARACTERISTICS OF THE BELGIAN SOLDIER.
[Essai de topographie typologique du soldat belge.] Captain Govaerts

Statistics relating to physical characteristics of natives of the various regions of Belgium.

COMBAT GASES AND PROTECTION AGAINST THEM.
[Les gas de combat et la protection.] Captain Féron

A bombardment of gas is no more deadly than one of shells. Well developed individual protection can safeguard the civilian as well as the soldier and do it as effectively as other means created for defense against bullets and shells.

During the last war gas mortalities came only to 9 per cent of the losses by projectiles and explosives. In England 3.3 per cent were killed by gas as against 25 per cent by other causes. Mustard killed only one man in every 300 infected. Thanks to the mask, gas is becoming the least deadly of weapons.

THE MORAL EDUCATION OF TROOPS.
[Quelques réflexions au sujet de l'éducation morale de la troupe.] Major Schneider

"For a guy like that we are ready to go anywhere any time," declare the soldiers of leaders who have their confidence and support. Constantly subjected to the scrutiny and judgment of his subordinates, an officer cannot readily hide his weakness from them. In order to instill the requisite spirit of collaboration in his troops an officer must first win their hearts and create a general feeling of happiness and friendship. Thus is engendered a discipline of far greater value in war than one which is built only upon fear of punishment.

TABLES AND GRAPHS FOR DETERMINING PROPITIOUS TIMES FOR EXECUTING NIGHT OPERATIONS.
[Tables et graphiques permettant de déterminer les moments propices pour exécuter des opérations militaires nocturnes.] Lieutenant Arend

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EUROPE IN ARMS!
[L'Europe en armies!]

From the French "L'Illustration" of 19 December 1936, are taken graphs and tables showing the current relative strength of various European armies.

As of the end of 1936, the regular establishments number: Belgium, 75,000; Turkey, 125,000; Poland, 240,000; Great Britain, 113,000 rgeulars, 130,000 territorials, 57,000 overseas; Little Entente: Rumania, 220,000, Czechoslovakia, 170,000, Yugoslavia, 110,000; Italy, 380,000 continentals and 120,000 colonials; France, 475,000 continentals and 210,000 colonials; Germany, 1,115,000 and 200,000 work troops; U.S.S.R., 950,000 two or three-year men, 350,000 eight to eleven-month men, 200,000 six-month men.

German, Italian, and Russian effectives mounted rapidly beginning in 1933.

In tank strength according to the data given France leads with 3,000 machines, and is followed by the U.S.S.R. with 2,500 and Germany with 2,300. Italy has about 1,200 and Great Britain merely 350.

In aircraft the five nations listed about doubled their strength from 1934 to 1936. Germany, in fact, jumped from 150 planes to 2,000, the equal of Italy. Russia tops all others with 5,000 planes. Great Britain has 1,600 and France, 1,300.

SWITZERLAND STRENGTHENS DEFENSES.
[Le renforcement de la défense nationale en Suisse.]

For motorization, mechanization, and the construction of small defensive works along her frontiers, the Swiss parliament voted 235 million francs (roughly 80 million dollars) in 1936.

Recruit training was increased by one month. The recruit receives from two to three months of preliminary instruction. Thereafter, for seven

years, he has fifteen days of active duty yearly. When he reaches 32 years of age he enters the reserve, and then is only called to duty twice during seven years. The "garde civile," composed of men from 40 to 48 years old, is only required to undergo an annual inspection.

The total strength of the Swiss army thus amounts to a half million men in a total population of 4,066,400 (1930 census).

At present the field army comprises nine divisions each of three infantry regiments and an artillery detachment. Three of these divisions are composed of mountain troops.

The army also has three Alpine brigades for service on the mountainous southern frontier. The nine divisions and three brigades form three army corps.

The Swiss heavy artillery has a motorized 105-mm (4-inch) gun with a 10-mile range. In addition to an artillery regiment of three groups, each division has a motorized "heavy" group, and one or more motorized companies of infantry cannon. The heavy howitzers are a part of army artillery.

The light troops have been completely reorganized. There are three brigades whose headquarters are garrisoned at Morges, Burgdof, and Kloten. A light brigade has two regiments each of three horse troops, a cyclist battalion whose 4th Company is a motorized machine-gun unit; one motorized machine-gun company; one motorized engineer company, and one motorized infantry cannon company.

Every infantry division has an organic reconnaissance detachment and a liaison detachment.

A reconnaissance detachment consists of a cavalry troop, a cyclist company, and a detachment of armored cars—matériel still under study.

A liaison detachment comprises a cavalry troop, a cyclist company, and a Landwehr (reserve) cyclist company.

Each of the Alpine brigades in case of mobilization would have a Landwehr cyclist company. The reorganization also contemplates the creation of six motorcycle companies.

ITALY: THE "FIAT VR-20" BOMBING PLANE.
[Italie: L'avion de bombardement "Fiat VR-20."]

The "Fiat VR-20" to be put into the Italian air forces is equipped with two 1,000 horsepower motors which give it a maximum speed of 273 miles per hour. The armament comprises six machine guns on three supports, and the bomb load weighs 7,700 pounds.

This plane has a radius of action of 1,875 miles. It is 51½ feet long, 14 feet high, 80 feet broad. It climbs to 23,000 feet in 21 minutes. Its ceiling loaded is 33,000 feet; empty, 39,000.

MOTORIZATION AND MECHANIZATION.
[Motorisation et Mécanisation.]

THE HERRINGTON TANK.—The United States Army has a small "Herrington" tank powered with an 85 horsepower motor giving a speed of 32 miles per hour. This tank weighs 3.7 tons, is 11 feet long, 6 feet wide, and 5 1/3 feet high. It carries one machine gun and one extra heavy machine gun or 37-mm gun.

THE VICKERS MEDIUM TANK.—The new medium "Vickers" 16-ton tank appears to be destined as the core of the British armored units. It has a 200 horsepower motor, goes 28 miles per hour, carries armor of 0.4 inch to 1.0 inch thick, mounts a machine gun and 37-mm gun in the upper turret and two machine guns in the lower (forward) turret. It can climb 45-degree slopes, cross 8-foot obstacles and 6½ foot inundations. There are six men in the crew. Its overall dimensions are: length, 21½ feet; width, 8 2/3 feet; height, 8¼ feet.

THE ITALIAN MEDIUM TANK.—Besides its little "Ansaldo Fiat" tank, Italy has a "medium" of 8 to 12 tons equipped with a Diesel motor, a 37-mm gun, and two machine guns. This tank goes 7½ miles per hour cross-country

and 20 miles per hour on roads. It crosses trenches 6½ feet wide and 3 feet deep. There are three men in the crew. It is said that there will be one battalion of these tanks in each tank regiment.

U.S.S.R.—The Russian Army now has from 3,500 to 4,000 modern tanks, most of which are Russian-made Christies. Armored units contain both tanks and armored cars. On 1 September 1935, the Red Army had: 2 motorized divisions, 6 tank regiments (one in the Far East), 16 independent tank battalions (6 in Far East), 9 transport battalions, 18 groups of armored cars (6 in Far East), and 4 groups of armored trains.

SANITARY SERVICE OF THE GERMAN ARMY.
[Le Service de Santé de l'armée allemande.] Colonel des Cilleuls, Major Sabrie, and Major Kerny

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REPORT ON PROGRESS IN MANCHURIA TO 1936.
[Les progrès de la Mandchourie en 1936.]

A digest from the book by South Manchuria Railway Company.

June 1937

THE TERMONDE BATTLES OF 26 AND 27 SEPTEMBER 1914.
[Les combats de Termonde des 26 et 27 septembre 1914.] Lieut. Colonel Willems

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DOUGHBOY'S BIBLE.
[Aide-Mémoire du fantassin.] Captain Leseul

The "Aide Memoire du Fantassin" compiled by Captain Leseul "sums up the individual instructions which every soldier should know," says the preface.

These instructions guide the soldier's actions: on the march, on trains, in camp, in combat, while scouting, when posted as sentinel, when serving as observer; also the skirmisher's actions when: advancing, halting, digging in, firing, closing with the enemy, in gas, in smoke, confronted by tanks.

The prescriptions covering the last three conditions are worth specking, especially these:

IN GAS

(1) Care for your mask like you do your rifle. . . .

(2) Precautions against mustard gas: Avoid putting hands on face, and scratching; disinfect hands before answering calls to nature.

(3) In mustard contaminated areas: Keep garments closed; don't touch suspicious objects; do not burn contaminated material; prohibit defecating in such areas.

THE SKIRMISHER IN SMOKE

(1) Be calm but on guard.

(2) Don't be bluffed; the enemy may attack or retreat.

(3) Put on gas mask and wear it until certain that fog isn't noxious.

(4) Prepare for close combat; fix bayonets.

(5) Don't leave a covered firing position; fog is no protection against bullets.

(6) Keep mouth closed, breathe slowly and regularly through the nose; if necessary put a handkerchief over the nose and mouth.

(7) If the fog disappears suddenly and if you are surprised, act immediately (defending in place of attacking, never running away).

(8) Avoid smoke producing machines, take care not to overturn them; also avoid streams of acids or burning substances.

(9) If burned by a smoke weapon, remove the stains with dry cloths or dry sand but never with water; call the medical man.

THE SKIRMISHER CONFRONTED BY TANKS

(1) Keep cool, have confidence in friendly antitank obstacles.
(2) Never run away for that means certain death.
(3) Remain prone and immobile; "the tank is as blind as a bat"—even if you are seen the tank has little chance of reaching you.
(4) A tree eight inches thick will hide you and protect you from a light tank.
(5) If you are in a hole that is narrow enough and deep enough, the tank will cross it without doing you any harm.
(6) A stump of light wood will suffice to immobilize a tank momentarily.
(7) Profit by the slightest halt or least hesitation or balk of a tank to aim (without exposing yourself) at the vulnerable points, such as openings and belly of tank. This is especially important if provided with armor piercing bullets.
(8) If you are an observer or sentinel, act as soon as you see the tank, giving the alarm by firing several rounds.

MISSIONS OF MILITARY AVIATION AND THE ATTACK OF GROUND TROOPS.
[Les missions dévolues à l'aviation militaire et l'attaque des troupes au sol.] Captain de Caters

Combat aviation becomes more and more important in all armies; it forms 80 per cent of the German, Italian, and British air forces. The author describes its employment and also that of "cooperating" (observation) aviation.

ORGANIZATION AND INSTRUCTION OF SANITARY TROOPS.
[L'organisation et l'instruction des troupes du Service de Santé.] Colonel Leman

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SUSPENSION BRIDGE FOR AUTOMOBILES.
[Pont suspendu pour automobiles.] Captain Hartung

Captain Hartung suggests using two cables suspended across streams as a military automobile bridge. To use this means, he would put pulley-like rims on the outer surface of automobile wheels, and thus, using the cables as tracks, enable the vehicles to cross under their own power. Such bridges would require very little matériel, would be practically invisible to air observation, and would be a very poor target for aerial or artillery bombardment.

THE MULTIPLE PURPOSE "FOKKER G-1."
[[L'avion à fins multiples "Fokker G-1."]

The multiple purpose "Fokker G-1" is a double fuselage plane of odd construction. Three Madsen machine guns, two Madsen 23-mm cannons, and a bomb load are carried. The plane weighs 6,600 pounds empty, 9,680 pounds in flight, loaded. Powered with two "Hispano-Suizas," its top speed is 280 miles per hour. It climbs to 3,300 feet in 1 minute 6 seconds; to 13,000 feet in 6 minutes 3 seconds; to 19,500 feet in 10 minutes 3 seconds; to 26,000 feet in 18 minutes 1 second. Its ceiling is 29,500 feet; its radius of action, a little under 1,000 miles. With Bristol "Mercury VII" motors, top speed is raised to 293 miles per hour, and climbing speed is slightly better.

PROTECTION OF THE PEOPLE AGAINST AERIAL ATTACK IN GERMANY.
[La protection de la population contre le danger aérien en Allamagne.] General Niessel

Under a law of 26 June 1935, "All Germans of both sexes, and also foreigners living in Germany, are required to carry out gratuitously all acts,

services, and loans required by the air defense." Warning sirens, model shelters, subterranean water reservoirs, and concrete telephone warning centrals have been installed in many cities. Countless gas masks have been sold and many more stocked in the large stores. Moreover, the people are instructed through many mediums—daily press, special magazines, demonstrations on wheels, lectures, movies, school instruction.

The Reichs Luftschutz Bund (Air Defense League) has six million members. Two thousand schools with nine thousand instructors teach the public. Twenty-one thousand five hundred special centers of air protection have been organized. The total of these services include 280,000 appointed functionaries and 1,100,000 volunteer workers acting as inspectors and leaders in the drills. Every building or group of buildings has its defense chief who is responsible and is obeyed.

MOTORIZATION AND MECHANIZATION.
[Motorisation et Mécanisation.]

AUSTRIA—AUTO TRANSPORT FOR INFANTRY.—Austrian manufacturers have produced a wheel-and-track carrier, having a road speed of 25 miles per hour and a cross-country speed of 1½ miles per hour. It carries three men including the driver but across country the two passengers walk. The vehicle, which does not seem to be armored, carries a machine gun, accessories and ammunition, or a light minenwerfer or an infantry cannon. Another type of carrier moves only on wheels and serves for infantry heavy weapons. Both types are designed for the motorized machine-gun companies (one per infantry regiment) and for the infantry cannon detachments (antitank) of the division.

SOME DATA ON AUTOMOBILES IN AUSTRIA.—On 30 September 1936, Austria had 110,610 automotive vehicles, among which were: 28,836 small motorcycles, 30,219 regular motorcycles, 1,206 3-wheel autos, 25,149 passenger cars, 21,022 trucks, 1,801 special autos, 233 tractors, 2,134 trailers.

There was one automotive vehicle for every 61 inhabitants and one automobile for every 140 inhabitants. This figure of 140 persons per automobile stands below Germany's 54, Belgium's 50, England's 20, France's 20, Italy's 108, Czechoslovakia's 120. On the other hand, Greece, Yugoslavia, Poland, Portugal, Rumania, and the U.S.S.R., and Hungary are even poorer than Austria in motor vehicles.*

MOTORCYCLE UNITS.
[Les unités motocyclistes.] Major Spannenkrebs

Motorcycle units on the march are among the fastest of motorized units. On the other hand, in combat their speed does not exceed that of infantry. Yet during combat or at its termination, when these units remount, they regain a speed ten times as great as that of infantrymen.

Motorcycle units are, in fact, infantry units before, during and after combat; however, due to its superior mobility, these units have obvious tactical advantages, foremost among them being their use as reserves and for reinforcement of other forces.

Of course the maximum mobility of motorcycle units cannot be attained except in rear areas and away from enemy interference. Yet these units in a war of movement are the most able to provide rapid reinforcements.

It would seem, then, that motorcycle missions resemble cavalry missions but these units should not be confused because each has its particular missions. In modern armies many cavalry units have been replaced by mechanized units and among the latter (motorized troops, armored cars, light tanks) motorcycles always figure, and along with engineers, antitank weapons, and motorized communication troops, fill the role formerly taken by cavalry divisions.

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*With these countries compare the United States where there is a motor vehicle for every five persons.—TRANSLATOR.)

Organization — Mission

Up to now battalions have been the strongest motorcycle units constituted, but companies also are formed as in the motorized reconnaissance units of army corps. The motorcycle battalion normally consists of a headquarters, three rifle companies and a machine-gun company, to which often is added a fifth company of antitank weapons, infantry cannon, and an engineer platoon. This fifth company enables the battalion to carry out certain separate missions.

The (motorcycle) rifle company has from 9 to 18 light automatics. Its fire-power may exceed that of an infantry rifle company. On the march, the automatic weapons are mounted in firing position on the sidecar. Separate motorcycle companies which are not organized into battalions generally have one platoon of machine guns

At present, in modern armies we find motorcycle units in:

(1) Reconnaissance detachments, motorized or partly motorized.

(2) Mobile divisions and independent mobile brigades.

(3) Large mobile units which are, in reality, large mechanized units [German "Panzer-Division" and French "D.L.M." (division légère motorizée)].

Reconnaissance Detachments.—In reconnaissance detachments the principal element normally is the armored car. Motorcycles serve to open the way for them and to reconnoiter obstacles hampering their advance. Such a detachment usually consists of one or two troops of armored cars and one or two motorcycle companies. In the French army corps and infantry division there are partly motorized reconnaissance detachments. The division reconnaissance group is mixed, containing a horse troop and a motorcycle troop with six light machine guns. The corps reconnaissance detachment consists of two horse troops and a motorcycle troop.

In Germany the reconnaissance detachments are entirely motorized and consist principally of two armored-car companies, a motorcycle company, and a heavy weapons company.

Mobile Divisions and Independent Brigades.—These large units thus usually have a battalion or a company of motorcycles destined to perform certain missions: advance guard, reconnaissance, security, rear guard, etc.

Large Mobile Units.—In large mechanized units there usually is at least a battalion of motorcycles having the same missions as those in mobile divisions.

The heavy motorcycle is a good cross-country vehicle though less mobile than caterpillar vehicles or horses. Yet many obstacles can be crossed on foot. One big advantage over other vehicles is the ability to make rapid turn-arounds in case of surprise. Thanks to their cross-country mobility, motorcycle units can deploy and dismount for combat much more rapidly than motor transported troops. Furthermore, motorcycles are easier to hide or camouflage from the enemy than large wheel or track vehicles.

Thus, besides marching speed, motorcycle elements are characterized by this ability, when near the enemy, of disposing of their machines and deploying, or of breaking off combat as in retrograde action.

Composition.—The motorcycle company is made up of three platoons mounted on motorcycles with sidecars. Each machine carries three men—two combatants and a driver. There are 66 vehicles in the company of which 60 are motorcycles. Of the 190 men in the company, 66, or 36 per cent of the total, are drivers. A truck-carried company, by comparison, without its combat train contains 30 vehicles and 150 men, of whom 30 (20 per cent only) are drivers.

Length of Columns.—The length of motorcycle columns is important: 380 yards long at a halt, whereas a truck-carried company measures only 306. However, this greater length is not dangerous because the speed of getting under way is about the same as that of any other motorized unit. Of course, the longer the column, the harder it is to protect, particularly against armored attacks by hostile reconnaissance formations. A motorcycle battalion which has a marching length of 10 miles cannot be protected

by only one antitank platoon and a few armored cars. Motorcycles while on the march must assure their protection by their road speed, their cross-country mobility, and their ability to conceal themselves from enemy observation.

The question arises whether there are advantages in putting armor on motorcycles. Such armored vehicles exist. It seems, however, that armor would make the machine less mobile, detract from its speed and movement across country, increase its gasoline consumption and its cost price, and finally obstruct the visibility now obtained.

Motorcycles should not be compared with cavalry or other arms, for they constitute an extra unit—having advantages and disadvantages—that are capable of being employed on various missions.

AIR ATTACKS UPON WARSHIPS.
[Les attaques aériennes contre les navires de guerre.]

Review of articles in the "London Illustrated News" and the German magazine "Die Sirene," commenting upon the possibilities of air attacks upon modern war fleets.

A sketch is shown of the relative appearance of a battleship when viewed from an altitude of 2,300 feet, 4,250 feet, 5,500 feet, 6,500 feet, 10,800 feet, 13,000 feet, 15,350 feet.

Attacks with torpedoes launched close to the water by airplanes when they are within one kilometer of a ship seem to be the latest perfection in air attacks at sea. This method appears to be superior to high altitude bombing and diving attacks.

ORGANIZATION OF ITALIAN EAST AFRICA.
[L'Organisation de l'Afrique orientale italienne.]

Outline of the territorial organization in the Italian colonies of East Africa and the military units used to garrison the colonies.

PANIC IN WAR.
[La panique à la guerre.] Lieut.General Kabisch

The German 38th and 43d Brigades began the attack of Boncelles, Belgium on the night of 5-6 August 1914. Arms were unloaded and orders given to do no firing. Advancing through woods where they couldn't see 20 yards in front of them, they were attacking an invisible enemy.

Suddenly firing began and spread in all directions. No one knew the strength of the enemy. Coming unexpectedly the fusilade created a panic.

Everybody began firing, firing at one another, and the panic spread as the dead and wounded piled up. Men no longer recognized each other; officers' voices were lost in the growing pandemonium. Even the commanding general of the provisional division was wounded in the arm with a bayonet by one of his own men.

Daybreak restored a measure of calm but a retreat was ordered which soon became a disgraceful rout. Yet, as later events proved, both the 38th and 43d Brigades were composed of excellent troops.

This affair shows that particularly at the beginning of a war every unit, regardless of what it is, may on a slight provocation become subject to mass hysteria, lose all its combative value, and become completely uncontrollable.

CANADIAN DEFENCE QUARTERLY (Canada)

October 1937

CHANGING GERMANY. Major Scudamore

THE MARCH OF "A" SQUADRON, THE ROYAL CANADIAN DRAGOONS, FROM ST. JOHN'S, P.Q., TO PETAWAWA MILITARY CAMP. Captain Mann

THE CARRIAGE AND DISTRIBUTION OF PETROL FROM RAILHEAD TO FIGHTING UNITS

THE NATURAL RESOURCES OF CANADA. The Honorable Crerar

CAVALRY JOURNAL

July-August 1937

SOME COMMENTS ON WAR. Major General Hines

MILITARY APPLICATION OF PHYSICAL GEOGRAPHY. Major Schwien

GENERAL CURÉLY: CAVALRY LEADER AND TROOPER. (II) Lieut. Colonel de Dalmassy

FORREST: NATURAL FIGHTING LEADER OF FIGHTING MEN. Colonel Greer

UNITED STATES ARMY PARTICIPATES IN THE INTERNATIONAL HORSE SHOW AT OLYMPIA (LONDON)

September-October 1937

WE MUST HAVE CAVALRY. Brigadier General Hawkins

MOBILITY AND THE CAVALRY LEADER. Major Johnston

CAVALRY MANEUVERS AT FORT KNOX. Lieut.Colonel Crittenberger

ARTILLERY SUPPORT OF CAVALRY. Major Wahl

CAVALRY JOURNAL (Great Britain)

July 1937

TWO CAVALRY EPISODES IN THE PALESTINE CAMPAIGN, 1917-1918. Part IV. General Barrow

GENERAL JOHN MORGAN: A CONFEDERATE CAVALRY RAIDER. By "Shabracque"

THE QUALITIES AND FAILINGS OF NAPOLEON'S CAVALRY. By "Thistle"

LUTZEN, 1632. Major Teichman

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THE YEOMANRY AT BALLIN AND AT EL MUGHAR (NOVEMBER 12TH AND 13TH, 1917). Major Teichman

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"TACTICAL AND ADMINISTRATIVE MOVEMENTS IN MODERN ARMIES HAVE BEEN RADICALLY AFFECTED BY THE INTRODUCTION OF THE INTERNAL COMBUSTION ENGINE. DISCUSS THE POSSIBILITIES OF ITS USE IN THE BRITISH ARMY IN ASSISTING TO OVERCOME THE STRENGTH OF MODERN DEFENCE AND IN COUNTERING THE INCREASING THREAT OF AIR ACTION." (Gold Medal Essay [Military], 1936) Wing Commander Slessor
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DIE KRAFTFAHRKAMPFTRUPPE

(Formerly, **Sanct Christophorus**)

By Captain H.N. Hartness, Infantry

April 1937

COOPERATION BETWEEN MECHANIZED TROOPS AND THE AIR CORPS. [ZUSAMMENWIRKEN VON PANZERTRUPPEN MIT FLIEGERN.] Major Bolckheim

The author has subdivided his article into six sections, the first, an introduction, in which he quotes Major General Guderian (the German counterpart of General Fuller) as follows: "In the future it is inconceivable that there will not be cooperation between the air corps and mechanized forces where two hostile armies meet." There follows a short elaboration as to the importance of both arms, that each is a powerful weapon and may alone disturb or even disrupt the hostile tactical and strategical plans.

Since mechanized forces are an especially important means in achieving the decision, it follows that both weapons must cooperate closely, the air corps to provide reconnaissance and security and to assist actually in the combat of the mechanized forces. Thereupon follows a delineation of the expected cooperation and its manner of execution.

I.—THE COOPERATION OF THE FLIER THROUGH RECONNAISSANCE

Terrain has as great influence upon the employment of mechanized forces as upon any other. Therefore it is of decisive importance that the mechanized forces have as exact and detailed information, as possible, of the terrain over which they will advance and fight. The map will give indications for the general employment and permit an estimate as to the terrain suitability for a tank attack, and to what extent the conformation will influence the form of the attack.

These map studies, however, do not afford the close study of the terrain which is afforded by oblique aerial photographs. Planes can provide the tank unit commanders this means of terrain study which is of especial value when a closer study from the ground is not possible prior to the attack.

Planes also provide opportunity for tank officers to make a personal air reconnaissance and thereby make a study of the terrain both from the attacker's and the defender's point of view. This type of reconnaissance, in meeting engagements and in those instances in which an attack must be made without assembly positions, is the only means of obtaining the necessary detailed terrain picture.

Moreover, it is of great importance that the mechanized force know what type, and to what extent, antitank defense measures have been taken by the enemy. As a supplement to the normal ground reconnaissances of the troops themselves, the air observation must search for mines and other obstacles and antitank guns both in position and in reserve.

A terrain and route reconnaissance is especially important when the mechanized force is employed against the flank or rear of the enemy. Such reconnaissance can contribute greatly to the celerity of the march and the achievement of surprise. The time and area of the attack can be considerably influenced by the air reconnaissance. Of course, the assumption is made that the reconnaissance results quickly reach the commander of the mechanized force. (See Section IV, "Communication With the Flier.")

II.—Security in the Approach, Assembly Prior to Attack and in the Withdrawal or Assembly After the Attack

In order to insure the surprise necessary for the employment of mechanized units, it is essential that the hostile air reconnaissance be prevented from observing the approach and the assembly of the mechanized units. For this purpose, air force elements are necessary; these elements to command, in so far as possible, the air area over the ground area of mechanized employment. In every instance friendly air units must secure the mechanized units against air reconnaissance so that the approach is neither recognized nor delayed, and so that the assembly is not disturbed.

In some instances air units, by means of their own motor noises, can camouflage the approach of mechanized units. Such employment, however, of our own air units should not by their activity give warning to the enemy of possible tank assembly areas.

Since it will often be impossible to foil completely hostile air reconnaissance, the employment of air observation units can be most helpful in checking the camouflage measures which have been taken by the mechanized forces. This check should be made not only on the march but during rests and in assembly areas.

An attack by air units launched into hostile territory can or may under certain circumstances attract the enemy's attention to that area or by an attack upon tank or antitank units can delay or hinder their activity against our mechanized forces. An air attack against hostile reserves is of especial importance during a tank attack, at that time when the enemy has recognized our mechanized attack.

After the mechanized force has executed its attack and during the time of assembly and reorganization there exists for this unit a certain "weak period." It is immaterial whether this assembly and reorganization will be made for a further advance in the initial direction, for an attack in a new direction, or for withdrawal from that area. It is essential that, at this time, the maximum protection be given the mechanized force and it is the air unit which by protecting against hostile air attack, by beating down reappearing or new-appearing antitank weapons or artillery as well as the reporting of these hostile weapons that material assistance can be given the mechanized force. Also during this period an active reconnaissance is necessary in order to locate approaching hostile mechanized and antitank weapons and by attacks to delay or to destroy these.

III.—Support During the Attack

The support which air units can provide mechanized units during attack is manifold:

(1) Observation of the attack by observation planes.
(2) Hindering hostile air attacks against the mechanized units.
(3) Locating and reporting hostile antitank weapons.
(4) Attacking hostile antitank weapons.
(5) Indicating objectives which must be attacked in order to assist the forward movement of the following infantry or armored division motorized infantry.
(6) Assisting the advance of the tanks by attacks against objectives which cannot be reached by the artillery.
(7) Reconnaissance and reporting of hostile reserves, especially of hostile mechanized forces and, above all, those on the flanks.
(8) Laying of smoke screens to blind or to deceive the enemy.

The observation of the attack by observation planes must be so carried out that the movement of the individual units of the mechanized forces can be followed exactly, in order to give the commander of these units as perfect a picture as possible so that he can take any measures he considers necessary, so that the higher commander can be kept informed of the advance of the attack, and so that the observation planes can maintain the necessary connection between the mechanized units and other troops when the distance between these two has become large or when the mechanized force attacks on a front considerably distant from the other troops.

In what way and to what extent hostile air units can effectively attack a mechanized force while it is attacking can probably only be explained in actual combat. Nevertheless, one must consider as possible a bombing attack, because a direct hit can destroy a tank. Therefore, friendly air units, during the advance of the tank units, must hinder hostile air attacks. Likewise it can be of importance to prevent air reconnaissance over the area of attack in order to make more difficult the employment of hostile tank and antitank units.

It is of especial importance in the attack to eliminate to the greatest extent possible the hostile antitank weapons. The cooperation of our own air units in the combatting of antitank units must necessarily confine itself primarily to those antitank units not yet in position, because the well camouflaged units in position individually or by platoon can seldom be located until they open fire. On the other hand, antitank units which are held in reserve or in readiness can be recognized and can be attacked when they move from their readiness or reserve positions to firing positions. Moreover, the air observation can and will report to the mechanized forces the location and employment of these antitank elements so that the mechanized forces can take the necessary counter-measures (for example, reorganization, change of direction). Above all, the air units can assist by low-flying attack against these antitank weapons and thereby disturb, delay, or even destroy.

There arises the important question if and in what manner the information mentioned in the paragraph above can be transmitted to the mechanized force. Without question this can be done only in exceptionally short messages by radio telephone. Practically, this question can be solved if the area of attack is studied and important points indicated on the map by numbers. This study and this indication must consider the enemy study of the terrain and the way in which he will probably employ his antitank guns. As an example, let us consider that the terrain has seven or eight important areas, as we look at them from antitank defense point of view, and that we number these areas 1 to 7 or 8 inclusive. Both the air observer and the tank commander have a map with these numbers. The air observer notes an antitank gun in position at "2" or going into position at "2." His message transmitted by radio telephone would consist only of the following: "2, antitank gun."

In a similar manner the observer can provide to the mechanized force units suitable for objectives which must be combatted in order to support the infantry or the motorized infantry.

Attack plane units must be directed against those objectives which cannot be fired upon by the artillery. Consequently their objectives must be hostile antitank weapons, hostile artillery, and reserves, beyond range of our own artillery fire or which may be unknown to the artillery.

Reconnaissance against hostile reserves during the attack must be thorough, especially on the flank, with especial emphasis laid upon the locations of assembled antitank weapons or tank units, or such units in motion in the direction of our own mechanized force.

The employment of smoke is of decisive importance in decreasing the effect of hostile antitank weapons. Since artillery, for example, may be employed only in the first phases of the attack in laying smoke screens, our airplanes must be employed, as the attack advances, to lay smoke screens to blind antitank weapons and tanks. It is of especial importance that the flier knows where, when and how long an area shall be smoked. This, to prevent a disturbance in the employment of their own mechanized units.

IV.—Communication With the Flier

The first requisite for the successful cooperation between mechanized units and fliers is the combined employment of these arms in peace (the best orders issued during war cannot supplant this experience). The flier must be exactly informed concerning the intentions of the commander as well as the planned execution of the attack. For it is only with this knowledge that the flier can fulfill his part of the mission.

Concerning the employment of mechanized forces, the flier must know:
(1) Routes of advance.
(2) Assembly areas, including the probable length of time in these areas.
(3) Time of attack.
(4) Area of attack.
(5) Objective.
(6) Probable duration of the attack.
(7) Where and when the support of the air unit will probably be most important.
(8) Assembly area after the execution of the attack, in so far as this can be pre-determined, or information to the flier immediately upon the determination of this assembly area.
(9) The number and kind of necessary air units.
(10) How reports and messages will be transmitted.

Before large attacks it is especially important that a conference be held between the air unit commander and the mechanized force commander in which all necessary measures and especially signals for the transmission of information are agreed upon.

In combat, communication between mechanized forces and air units is obtained by means of radio telephone and visual signals.

In many instances it will be practicable to designate targets for the mechanized forces by means of some sort of tracer ammunition or Very pistol. The choice of these fired signals must be such that they will not be confused with any signals employed by other ground troops.

It need not be emphasized that the air unit must have a liaison officer with the mechanized force and a mechanized force must have a liaison officer with the air unit.

V.—Concluding Notes

The tasks mentioned heretofore are manifold. Their execution is essentially dependent upon the air units available. Where mechanized forces attack, these forces are the main weapon during the continuation of their employment. Therefore, there should be no minimizing nor sparing of the air units employed in assisting the mechanized attack. There must be no half measures, and dispersal of forces must be avoided.

That smoke, heavy rain, hail, snowfall, and thick, low clouds can essentially hinder the activity of the air arm is well known to the mechanized force.

It is of importance that clear, well-defined missions be given the employed air units, that there be continuous communication, and that the commander of the mechanized force keep the air units continually informed of his plans. Landing places must be prepared.

Not only should one be familiar with the theory concerning the manner and necessity of cooperation between these two arms, but exercises must be held in time of peace in order to provide the necessary experience and to school the arms concerned in their duties. It is only by such means that the maximum effectiveness can be expected when war comes.

The preceding discussion makes no claim on completeness. It hopes to fulfill the purpose of directing attention upon this important subject and to point the direction in which the necessary peace-time training should lead for the maximum utilization of both weapons in the future.

Self-propelled mount—no; armed tank chaser—yes!

[Selbstfahrlafette—nein, Panzerjäger—ja!] Captain Moltke

The author has addressed himself to a study of the suitability of the self-propelled mount and the antitank tank as antitank weapons. He begins his discussion with the statement that there is probably no one concerned with antitank defense whose dream and desire is not to have a weapon, be it self-propelled mount or antitank tank (tank chaser), which has the ability not only to defend against but also to seek out, to chase and defeat the tank enemy. He further prefaces his remarks with the statement that desires and wishes alone should not be the basis upon which the choice of

an adequate antitank defense weapon is made but that there should be a cold blooded investigation by those who are especially suited for this investigation; that is, by those who have had experience both with and against tanks.

Against an arm equipped with so many means and assigned to so many various kinds of missions as is the tank, a single type of defense weapon can hardly be considered suitable for one hundred per cent effectiveness in all situations. Antiaircraft artillery cannot accomplish its mission with one type of weapon only. The author points out that either the horse or the motor-drawn antitank gun is not a complete solution for all kinds of employment, that as the distance in rear of the main line of resistance increases, the size and caliber of the antitank gun must be increased, and in his opinion the present antitank gun is perhaps somewhat large and complicated for the infantry forward zone defense and that perhaps this weapon is principally suited, in fact, probably the ideal solution for defense of the artillery area.

The author does not wish to assert that the present German antitank gun, 37-mm, is not an excellent weapon and that this weapon must be supplanted by something new. On the other hand, he believes it to be such a good weapon that it is extremely difficult to find something better.

Every weapon has its main characteristics, its main advantages opposed to which, of course, it has its disadvantages. Consequently no attempt has been made to line up the advantages of the antitank gun as existing as well as its disadvantages, and to weigh them as in a scale against the advantages and disadvantages of a self-propelled mount.

In considering the main advantages of the present antitank gun, Captain Moltke names the following:

(1) In comparison to its extremely effective fire-power, it offers a very small target to the enemy.

(2) It is so easily fitted into the terrain and camouflaged that it is not able to be observed by the enemy prior to the time it opens fire and even after it has been observed, the difficulty of maintaining observation from a moving, jolting tank in which the observer can see only through small slits, this antitank gun becomes in reality to the tank observer a vanishing and reappearing target. In fact, the author states he has had the experience that in comparatively open terrain, tanks have not discovered the antitank gun until the last one hundred yards before they reached the gun position. The gun was firing blank ammunition which gives off only a small amount of smoke. From the standpoint of the enemy, it is most unpleasant to have as an opponent that which cannot or which is very difficult to be seen and therefore which he cannot effectively combat. The author does not believe that it is an exaggeration to say that the camouflage possibilities of the present German antitank gun are one hundred per cent.

Next he considers the self-propelled mount. This weapon unquestionably has the advantage of immediate fire readiness. Theoretically, it sounds very reasonable to say that this weapon is able to quickly advance against a tank which has broken through, and wherever the tank is met to be able to open fire immediately. But how does this appear in reality? The purpose of the self-propelled mount is to be able to shoot as it stands and without delay. And what does "as it stands" mean? It means without consideration of the suitability of the fire position. For when this weapon, in order not to expose itself too much, must seek out a fire position, then it is not ready to fire as it stands. Let us assume that the self-propelled mount is suddenly confronted by the hostile tank and presents to this tank its imposing size. What then is the situation, even though the self-propelled mount is able to open fire first? It is in a position readily discernible to the tank occupant and it is of such a size that it cannot vanish from the area of observation of the tank gun and finds itself a few seconds later under the devastating firing of one or more machine guns. What happens then needs no further description. And what about the personnel operating this self-propelled mount? It is three to six feet above the earth, fully unprotected, moving about on a sort of presentation platform, offering a splended target better than which no tank gunner can ever expect to find.

Every field soldier knows that at the first whistle of bullets the bravest seeks to bury himself in mud or eatrh. Especially great heroes alone will remain on the unprotected platform of the self-propelled mount during this hail of bullets, continue to serve their piece, and quietly shoot down the tank.

It has been said that the self-propelled mount need not let itself be surprised, that by reconnaissance it can secure itself from such sudden meetings and therefore search out suitable fire positions. But when the time is available there is not the necessity for this immediate readiness to fire, and therefore no necessity for the self-propelled mount. In such situations the antitank gun drawn either by horse or by motor can better accomplish the task.

And what about the other superior characteristics of the self-propelled mount? Let us assume that a company of self-propelled mounts has been able to take up an ideally concealed fire position (which in itself is a more difficult job than would be the occupation of such a position by the present antitank gun), and the company remains unrecognized by the enemy after it has opened fire. In every instance the fire of the tanks would be concentrated in the direction of the firing self-propelled mount company. We are familiar from field exercises with the tremendous fire-power emanating from an attacking tank battalion, and purely from a theoretical point of view we can estimate how many bullets in one minute from hundreds of machine guns can be delivered in a sector not greater in width than 1,000 yards. The percentage of hits against the personnel of the self-propelled mounts as compared to those against the antitank gun is so much greater, not to mention the tremendous morale pressure placed upon these defenseless self-propelled mount crews that the presumable advantage given to the self-propelled mount, namely its height, permitting it to shoot over comparatively high obs›acles, is outweighed by its lack of defense compared to the antitank gun.

It is the author's belief that the so-called immediate fire-readiness of the self-propelled mount—its main advantageous characteristic—is a dream, although a beautiful one. Furthermore, he does not believe that the other advantages attributed to the self-propelled mount are of sufficient weight to outweigh the advantages which the antitank gun has actually in the field.

In answer to the contention that the self-propelled mount has a superior fire capability he replies: "The self-propelled mount has an armor-piercing weapon but it is employed against armored vehicles, whereas the armored vehicles themselves need only machine guns with which to combat the self-propelled mount. In fact, the superior fire capability is one hundred per cent on the side of the tank, since it can fire in one minute hundreds of machine-gun bullets, whereas the self-propelled mount can probably deliver but a dozen or more in the same period. And since the self-propelled mount can only fire by direct fire, even its superior mobility will not enable it to remove itself from the effective visual range of the tank machine gun. It is only a dream to believe that the self-propelled mount can freely and unopposed deliver its fire and then disappear.

"For those who have participated in tank exercises in which ball ammunition has been employed, it is evident that no movement of an unarmored enemy is possible within the effective range of the tank machine weapons.

"Attempts have been made to arrive at a combined weapon, for instance, one suitable not only for antitank defense but simultaneously for antiaircraft defense. Such measures are half measures. Both of these arms require a weapon employed solely on its primary mission. Men cannot serve two masters. Without question the antiaircraft weapon will fire against tanks when situations for this fire are favorable."

Although in this article the author has sought to eliminate the self-propelled mount from consideration as a suitable tank weapon, he has not sought to produce the impression that the present antitank gun should remain the only antitank weapon.

He goes on to state that attempts should be continued to find something better or at least a weapon complementary to the antitank gun, and for this purpose he lists the requirements which he believes should be fulfilled by a suitable antitank weapon especially for employment in rear of the infantry area. The characteristics he enumerates as follows:

(1) The weapon must have a greater speed than the tank not only over open ground but in somewhat rough terrain because the tank as the attacking weapon always has an advantage.
(2) It must be able to shoot from the vehicle itself.
(3) It must have a certain armored protection.
(4) It must offer a small target.
(5) Its construction cost must be greatly less than that of the tank.

It will be said that the production of such an antitank weapon (armored tank chaser) is technically impossible, that such construction is a kind of tank and that one might as well build smaller, more rapid, and cheaper tanks. Perhaps, however, it is possible, by eliminating certain characteristics which the tank as an attack weapon must have, to construct a vehicle with the characteristics enumerated above.

What can be eliminated?

(1) The tank chaser does not need to have as great cross-country mobility as the tank, which as an attack weapon, must be able to cross very difficult terrain, whereas the tank chaser within its field of fire can seek out favorable approaches and let the tank unit approach him. Just how this ground speed can be accomplished, whether it be by four-wheel or six-wheel drive or by half track, will not be discussed in this article.

(2) The armored tank chaser need not be so strongly armored as the tank. From the time of its penetration into the hostile position the tank is attacked by a fire from all sides, whereas the tank chaser presents only its front as a target. It is to be presumed that such part armament will reduce considerably the weight of the vehicle.

(3) The tank chaser does not necessarily need a complicated automatic armor-piercing weapon but a single shot weapon such as the antitank gun will suffice.

(4) The tank chaser need be supplied with less ammunition and less gasoline and oil than the tank because the tank ordinarily executes distant missions.

Whether the requirements, minimum, which the tank chaser must have can be satisfactorily embodied in a vehicle remains for the technician to determine. If such a vehicle cannot be constructed, then it is better to remain one hundred per cent by the antitank gun than to take half measures and accept the unprotected, unsatisfactory self-propelled mount.

May 1937

FURTHER DEVELOPMENTS IN MOTORIZATION IN FOREIGN ARMIES. [Weitere Fortschriette der Heeresmotorisierung in fremden Heeren.]

ITALY—EQUIPMENT OF TANKS WITH FLAME THROWERS.—"Krassnaja Swjesda" reports an Italian "Fiat"-Anseldo tank whose twin machine guns have been replaced by a flame thrower. According to British press reports, this vehicle was first tried out in Abyssinia. Whether its employment was merely provided for in Abyssinia, or whether the Italians contemplated its use in the future, is unknown. The employment, however, of these weapons in exercises in the vicinity of Rome and their type of employment there indicates that the Italians plan to use them as infantry support. According to "Krassnaja Swjesda," this vehicle has the following characteristics: weight, 3.2 tons; speed, 22 miles per hour; cruising radius, 85 to 90 miles; length, 10¼ feet; width, 4½ feet; height, 4 feet 4 inches.

JAPANESE TANKS—TACTICS.—"Krassnaja Swjesda" extracts from the Japanese publication "Training Regulations for a Light Tank Battalion," 1935, the following:

In contrast to the tank battalion equipped with old, slow-moving tanks, the battalions equipped with the new vehicles shall not only, as formerly, be employed for close support of the infantry but shall, to a limited degree, be employed on independent actions. According to Japanese doctrine, when only a single tank shall remain in action, that tank shall continue the attack, and this tank itself even when its weapons have ceased to fire shall

be driven forward as a battering ram. Should the vehicle itself become incapable of movement, the crew shall continue the attack on foot.

OBJECTIVES AND MISSIONS.—Destruction of the hostile centers of resistance (nest of resistance), of elements executing flanking fire as well as other hindrances to the advance of the infantry. The battalion will advance with the first infantry wave holding one-third of the tank unit in reserve. The battalion will advance by bounds from cover to cover 100 to 250 yards in front of the infantry and in this manner work its way forward through the main battle position. As a rule it will execute no independent tank attack against artillery. In the defense, tanks are to be employed in counterattack.

In the attack an infantry division will have at its disposal from one company to a battalion of tanks. The tanks thus become the close support artillery, whereas the artillery of the attacker counterbatteries the hostile artillery and lays smoke. During the attack the crew fires from the tank either while moving, by short halts, or from concealed firing positions.

LEADERSHIP.—The platoon leader leads his platoon in accordance with his mission and bases his action upon his independent decision. The company commander is responsible for reconnaissance and for connection with the supporting infantry; for this purpose small tanks are employed. The tank battalion is the basic unit which will execute independent battle missions. The battalion commander will most frequently find himself in a tank, sometimes from a ground observation point.

As a rule, very close cooperation is maintained with the infantry; changes in the situation may demand independent tank action. After the execution of the mission, the tanks are employed in fixed fire positions in order to participate in further combat.

TRAINING.—The training lays emphasis upon observation of the crews from the tanks, on signal communication (radio telephone and flag), the maintenance of continuous communication with infantry and artillery, upon map reading, terrain appreciation, and night attacks.

ORGANIZATION.—In each battalion there is organically a park company whose mission is the repair and replacement of tanks, the supply of ammunition, gas, and oil, as well as the de-gassing of contaminated tanks.

RUSSIA—INFLATABLE PONTONS EMPLOYED TO TRANSPORT TANKS OVER WATERCOURSES.—In Russia various attempts have been made employing the simplest means to ferry or transport tanks across watercourses. One means employed is to bind together three large inflatable pontons upon which two light tanks can be transported across a stream.

GREAT BRITAIN—AMPHIBIAN TANKS.—"Krassnaja Swjesda" reports a British attempt to make tanks amphibious or semi-amphibious. For this purpose floats are attached to either side of the tank. In this manner as many tanks as desired can be sent across a watercourse. The floats employed were the normal pontons which were constructed in 1929-1930 by Engineer Straussler and up until lately have been employed in the construction of ponton bridges. For the crossing itself, the tank on its under side must be made water-tight and there must be a propellor and a steering arrangement provided.

ITALY—NEW ANTITANK WEAPONS IN ITALY.—According to "Krassnaja Swjesda" the Italian Army is using a 20-mm Scotti as well as a 47-mm antitank gun. The first is also provided for antiaircraft defense.

The 20-mm machine cannon has a vertical range of about 3,800 yards and a horizontal range of about 5,300 yards with an initial muzzle velocity of about 2,750 feet per second; a horizontal traverse of 360°; elevation 80°. The round of ammunition weighs about 3 pounds. Magazines of 15 and 60 rounds each are provided. The cannon can be broken down into three parts, each weighing about 225 pounds, weight in firing position about 475 pounds, on the march about 675 pounds.

The 47-mm antitank cannon was employed to a great extent in the autumn maneuvers of 1935. One type of round weighs slightly over 3 pounds; the muzzle velocity is approximately 1,825 feet per second. The other type of round employed against other objectives weighs a little over 5 pounds, with a muzzle velocity of 1,300 feet per second. This round is an

explosive grenade type. The gun can be distributed in 4 loads drawn by horses. The 3-pound round can, at 750 yards, penetrate armor approximately 1½ inches thick when it strikes at a 90° angle, and about 1.2 inches of armor at a 60° angle of strike. The cannon weighs about 625 pounds on the march and about 575 pounds in firing position.

June 1937

TANKS AND DEFENSE AGAINST TANKS IN SPAIN.
[Panzer und Abwehr in Spanien.]

The author quotes an article taken from the Czechoslovakian magazine, "Die Zeit," to which he wishes to make reply. The article quoted is as follows:

"From the standpoint of surprise, tanks remain far behind all expectations. They could not change the type of trench warfare which existed during the World War; Spain likewise is traversed with trenches just as were the battlefields of 1914-18.

"The Nationalists employ two kinds of tanks: one an extraordinarily mobile tank equipped with light machine guns; the other a medium heavy tank equipped with large caliber machine guns. Both types have a crew of but two men: one man as driver, the other as gunner. The light tanks have a speed of approximately 30 miles on flat, and 21 miles on very hilly terrain. This speed gives them a certain degree of protection against cannon fire, but in the trench area where they are unable to climb the steep banks, they find themselves blocked and sacrificed to hostile artillery.

"The Red militia uses the clumsy, large heavy tanks of the Soviets. These, in addition to a machine gun, have a light, rapid-fire cannon and many of them have an automatic flame thrower. In comparison with their size and weight they are relatively speedy and in fact a stream is no obstacle to them, for they can swim. Yet these Russian tanks were the most easily destroyed, for the Russians in their construction made one great mistake. They used rubber in construction. It suffices to dash gasoline on these tanks which in turn ignites, and the tanks are turned into smelting ovens. The militia soldier considers it a certain death to advance to the attack in these tanks. It has happened that in a single attack 6 of 7 tanks were burned within a few minutes. The consequence is that the tank crews have committed sabotage. They have jimmied the motors or bored holes in the gasoline tanks in order not to be sent out and burned alive.

The antitank guns of Franco have proved themselves beyond doubt. These guns, protected with a small shield in front, mounted on rubber-tired wheels and with a long, small bore have an astounding accuracy. They fire extraordinarily rapidly, and when the crew has sufficient courage to permit the tanks to approach closely they can practically destroy the approaching tanks."*

The author questions the advisability of drawing too definite conclusions based upon the operations in Spain. Therefore, he wishes to advance several questions which may throw light upon the entire subject.

(1) What is the number of tanks employed in Spain?

He answers this question by stating that when we put together all the numbers which have appeared in the press that simultaneously nowhere have there appeared more than 50 tanks in any one engagement. Therefore, he concludes that each side does not have at its disposal more than 100 tanks.

What do 100 or 200 tanks mean, especially on a front of 1,500 miles? Based on the teachings of German and foreign doctrine, no great success can be expected with such a small number of tanks. Apparently the writer in the Czechoslovakian magazine has forgotten or perhaps never even considered what happened at Cambrai 20 November 1917. Experiences of the World War demand a broad and deep mass (50 tanks can hardly be considered such a mass), which breaks with surprise into the enemy position as

*(NOTE: This description of Franco's antitank gun fits exactly the German 37-mm antitank gun with which the German Army is today thoroughly equipped.—TRANSLATOR.)

a mass, pushes through and still after the breakthrough has at its disposal a mass.

(2) Even under the assumption that the war in Spain is a different type of war from that fought in 1914-18, there are still other considerations which raise their heads.

(a) What type of training, equipment, and organization had these tank units in Spain?

(b) What is the suitability of the commanders who command these tank units and who employ these tank units?

(c) What is the cooperation with the other arms, especially with the infantry?

(d) What are the capabilities of the individual tanks?

(e) What satisfactory or unsatisfactory experiences can be ascribed to the matériel, the crews, the leaders of the tanks, and to the higher leaders?

(f) What influence has the theater of operations, terrain, etc., upon the employment of the tank?

Other questions might be asked, but answers to any should be based on experience, not opinion. Judging from articles by competent authors that have been published in journals of those countries which during the past twenty years have worked with the solution of the tank question, it is evident that the armies of these countries change their points of view every few years and that the development of this tank question is still in progress, that a final answer has not been found, and that each is especially happy when he has found what appears to be a partially usable solution. It is obvious that today's technical advancements and the possibilities arising therefrom will not permit a conclusive and exhaustive study of this question.

All armies recognize that the tank soldier needs a long and thorough training (in England this training is four years). All armies recognize the tremendous demands made to maintain tank elements ready for battle and that the employment and leadership of tanks demands the utmost, not only from the tank but from the leader.

Is it not too much to demand even when we recognize all his good qualities that the Spanish soldier takes material which is strange to him, whose possibilities and limitations are unknown to him and which he has only in limited quantities, and expect that he shall, in a few weeks, solve the problem which has been troubling the military heads of the rest of the world for two generations?

The author states that he has only raised a few questions but that to those with understanding it is evident that from the small experience obtained in Spain no definite conclusions can be arrived at as to the worth or lack of worth of the tank weapon, as to their employment in relatoin to other weapons, as to their suitable organization, their leadership and capabilities.

MARINE CORPS GAZETTE

August 1937

THE GUARDIA NACIONAL DE NICARAGUA. Captain Carlson
MODERN PISTOL TRAINING FOR THE MARINE CORPS. Lieutenant Yeaton
NAVAL ATTACKS ON THE DARDANELLES. Captain Pefley
JAPANESE ACTIVITIES IN NORTH CHINA. Colonel Nikolaieff

MILITARWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

By Major E.M. Benitez, Coast Artillery Corps

April 1937

BENEDEK AND BENEDEK LEGENDS.
[Benedek und Benedek-Legenden.] (I) Colonel Heller

Marshal Benedek, the defeated Austrian commander in the Battle of Königgrätz in 1866, has always been severely criticized for the manner in

which he conducted that engagement. The writer reviews the book entitled, "I Will Render an Account," published in the latter part of 1936. The author of this book, Count Lonyay, tries to prove that Benedek was the victim of the "court retinue" and of the hatred of the Austrian nobility. According to Colonel Heller, the above statements as well as the charges made against the Austrian Emperor, have no foundation of truth.

SEAPOWER AND POLITICS.
[Seemacht und Politik.] Lieutenant Handel-Mazzetti

An analysis of the influence that seapower has on the policy of all nations, dealing in particular with the situation of Great Britain, France, Italy, Japan, United States, Russia and Germany, before and after the World War.

The combined strength of the French and British fleets helped to secure the independence of Italy in 1860. The British command of the sea compelled Italy to abandon the Triple Alliance at the outbreak of the World War.

After Fashoda, in 1898, France was compelled to give in to England, and, as a result, she completely changed her naval policy from one of antagonism against Great Britain to one of friendship. The Entente Cordiale was the result of this friendly attitude.

With respect to post-war policies, the attitude of Italy and Japan has modified Great Britain's policy towards these two nations. Italy's ultimate objective seems to be to secure communication between her African possessions by the occupation of Egypt.

AREAS ALLOTTED TO UNITS AND THEIR BOUNDARIES IN MOUNTAINOUS COUNTRIES.
Nahstellen und Abschnittsbildung im Gebirge.] Major Heydendorff

Experience shows, in general, that the junction points between areas allotted to front-line units are weak defensive places, and they are even more so in mountainous country, where the selection of boundaries may decide the fate of the defense. Mountain peaks and rivers are convenient points to select on a map; but they actually are not the best boundaries, even though the word "inclusive" is used in designating sectors.

The author mentions the following three examples, where unwise assignment of boundaries caused disastrous consequences:

(a) The capture of the Krn peak in the Upper Isonzo by the Italians in 1915.

(b) The boundary between the Italian IV and XXVII Corps, resulting in the Austro-German breakthrough across the Isonzo at Tolmein, 24 October 1917.

(c) The Italian attack on Mount Ortigara, in Southern Tyrol, June 1917.

THE PSYCHOLOGY OF THE SOLDIER.
[Wege zur Soldaten-Psychologie.] Captain Ambros

Compulsory service has again been adopted in Austria after a lapse of eighteen years. The author believes that the officer should study the psychology of his men, encouraging their spirit of loyalty and devotion to their country.

THE CIVIL WAR IN SPAIN.
[Der Bürgerkrieg in Spanien.] (III) General Wiesinger

A review of the state of affairs in Spain to include 15 March 1937. Of the 47 provinces, 26 are now in the hands of the Nationalists, 14 in those of the Government and the possession of the remaining 7 is being contested.

The campaign around Malaga, the Guadalajara offensive and the government operations in Asturias are discussed in this article.

May 1937

BENEDEK AND BENEDEK LEGENDS.
[Benedek und Benedek-Legenden.] (II) Colonel Heller

Continuation of a study on Benedek's character, commenting on the merits of the Austrian general and his campaigns of 1848, 1849 and 1859 in Italy, his relations with the famous Count Radetzky, his services as Chief of Staff of the Army, and as army commander at Verona. Benedek committed the error of venturing a decisive battle at Königgrätz with few probabilities of success. The author refutes the charges made against the Austrian Emperor by Count Lonyay and bases his arguments upon authentic documents, in the Emperor's own hand-writing, on file in the Archives of Vienna.

RESERVE OFFICERS DURING SEVENTY YEARS IN AUSTRIA.
[70 Jahre Reserveoffiziere in Osterreich.] Major General Kainz

An account of the development of reserve officers from the eventful year of 1866 to the present day. Compulsory military service dates back to that year. During the World War, Austria Hungary had 42,300 regular army officers and 130,000 reserve officers. There was no reserve organization from the termination of the World War up to 1933, in which year the Officers Reserve Corps was again organized by Chancellor Dolphus. In 1936, Dolphus' successor, Chancellor von Schuschnigg, reestablished the compulsory military service, so that now the reserve system which had existed since 1866 has been revived.

SUPPLY AND REPLACEMENT OF ARTILLERY AMMUNITION.
[Einsatz und Ersatz der Artilleriemunition.] (I) Major Zuber

A description of the difficulties experienced during the World War in supplying ammunition. Major Zuber believes that in peace time, special maneuvers, dealing exclusively with ammunition allotment and supply, should be conducted in order to avoid the errors committed during the last war.

EXPANSION OF GREAT BRITAIN'S AIR DEFENSE.
[Aufbau und Umfang von Englands ziviler Luftabwehr.] Nis Petersen

One of the British political leaders has stated that the "air arm has caused the practical disappearance of the 'blue streak,' as the English Channel is called. The Navy does not give England the protection today that it used to give her centuries ago." This line of thought has had the effect of increasing the Royal Air Force from 2,400 to 4,100 airplanes, while the Home Defense Force is being increased from 500 to 1,500 machines. In conjunction with this increase in aerial defense, steps have been taken to protect the civilian population and industrial centers against enemy air attacks.

June 1937

BENEDEK AND BENEDEK LEGENDS.
[Benedek und Benedek-Legenden.] (III) Colonel Heller

RECIPROCAL EFFECTS OF STRATEGICAL AND TACTICAL REQUIREMENTS.
[Wechselwirkung zwischen strategischen, operativen und taktischen Erfordernissen.] General v.Pitreich

The author believes that the following priority of requirements was one of the lessons learned from the World War: first, tactical; second, operations;

and last, strategical. Since the World War, two new arms have been developed: tanks and aviation. The influence that these weapons may have in future wars, and whether or not the priority order established during the World War as above stated may be subject to changes, is discussed in this article.

LIMITATIONS OF MOTORIZATION IN THE ARMY.
[Grenzen der Heeresmotorisierung.] Lieutenant Krasa

Since the World War all countries have shown a decided tendency towards motorization. The circumstances which limit the extent of motorization, such as industrial capabilities, availability of fuel, economic situation, terrain and road nets, and the motorization of the army in Austria are analyzed in this article and the author's conclusions drawn therefrom.

SUPPLY AND REPLACEMENT OF ARTILLERY AMMUNITION.
[EINSATZ UND ERSATZ DER ARTILLERIEMUNITION.] (II) Major Zuber

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MILITAR-WOCHENBLATT (Germany)

By Major E.M. Benitez, Coast Artillery Corps

21 May 1937

THE EMPLOYMENT OF TANKS AS PRESCRIBED BY THE FRENCH FIELD SERVICE REGULATIONS, 1936.
[Französische Panzerverwendung 1936.] (I) General v.Eimannsberger

In August 1936, the French War Ministry published new regulations governing the tactical employment of large units. Based upon these regulations, the author deducts the French basic principles for the employment of tanks, analyzes these principles in detail, and then draws a number of conclusions concerning the French thought on the employment of tanks in the attack.

THE SOLDIER.
[Soldatentum, Wesen und Form.] Captain Wagener

MUST CAVALRY FIGHT?
[Soll Kavallerie kämpfen?]

After discussing the missions of the division cavalry, the author maintains that division cavalry must also fight, and should, therefore, be provided with the means to do so. He suggests the organization of such a regiment in peacetime. Present division reconnaissance detachments should, in the author's opinion, be replaced by cavalry groups of a combat power equivalent to that of an infantry battalion. This group would consist of cavalrymen and of cyclists. The equipment of the latter can be replaced with comparatively little expense; moreover, if a good road net is available, their speed would be greater than that of the mounted troops. Vice versa, if roads are poor, the mounted detachments would arrive first at the scene of battle, to be reinforced by the cyclist detachments before the combat has reached a critical stage. The proposed division cavalry group should be reinforced by a battery of four mountain guns, an engineer sapper section, and if the road net is good, by two sections of reconnaissance, light armored cars.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

A continuation of previous articles, this one dealing with the capture of Bilbao by the Insurgents.

28 May 1937

THE FIGHT FOR THE STRONGLY FORTIFIED PLACES ON THE WESTERN FRONT.
[Der Kampf um Festungen auf dem westlichen Weltkriegsschauplatz.] General Klingbeil

For the conduct of a war on two fronts, the geographical location of Germany demanded, according to the German War Plans, a prompt decision on the Western Front, in order to make troops available for the Eastern theater of operations. The German General Staff made its plans with this end in view, even to include the type of training of the army, and the attack plans against the enemy fortified places. General Klingbeil then discusses the plans of operations in the attacks on Liege, Namur, Maubeuge, Amberes, Givet Longwy, Verdun, Toul and Epinal.

THE EMPLOYMENT OF TANKS AS PRESCRIBED BY THE FRENCH FIELD SERVICE REGULATIONS, 1936.
[Französische Panzerverwendung 1936.] (II) General Eimannsberger

A discussion of the French combat principles in various phases of combat, such as the development for attack, artillery preparation, tank combat without infantry support, employment of division armored cars and artillery protection, with conclusions as to the merits of those principles.

ARMENGAUD'S AERIAL STRATEGY.
[Armengaudsche Luftstrategie.]

Comments on the article written by General Armengaud, published in the February 1937 issue of "Revue Militaire Générale," in which the French general suggests the employment of the British, Belgian and French air forces for a common purpose, in case of war.

FIELD ARTILLERY AND ANTITANK DEFENSE.
[Tschechische Ansichten über "Feldartillerie und Panzerabwehr."]

The author discusses the Czechoslovakian ideas on the employment of artillery against tanks, and shows that while the field gun is the most dangerous weapon against tanks, the real threat to the tanks is the special antitank guns.

4 June 1937

CLAUSEWITZ AND MOUNTAIN WARFARE.
[Clausewitz und der Gebirgskrieg.] Captain Emminghaus

The technique of warfare has undergone so many changes, especially in regard to mountain warfare, that Clausewitz' teachings have lost some of their value. The lessons learned in mountain warfare, as a result of the World War, 1914-1918, are as follows:

(1) In mountain warfare the terrain and climate are so important that only troops provided with special equipment and that have undergone special training can be successful.

(2) The terrain decidedly favors the defender and may even permit him to accept a decisive defensive battle.

(3) The terrain also favors an elastic defense, provides cover and concealment, furnishes means of providing surprise and is especially favorable for launching flank attacks.

(4) The possession of the heights also gives control of the valley, or defile, as they can be readily covered by fire-power.

The control of a pass, in the enemy's possession, cannot be secured by a frontal attack, but by outflanking the enemy and compelling his withdrawal. It is essential, above all, that troops receive special training, such as climbing heights, particularly those covered by snow or ice, training in use of skis and the like, so as to be experienced and accustomed to the hardships involved in fighting in mountains.

REMARKS ON THE CONSTRUCTION OF SMALL TRENCHES FOR ANTITANK DEFENSE.
[Betrachtung über Schützenlöcher und Panzerdeckungslöcher.]

About a year ago, the German army received orders to conduct experiments on the construction of small trenches for antitank defense. The type recommended, which has already been tried out at the Infantry School with satisfactory results, consists of short trenches, deep enough to accommodate two men armed with rifles, and to protect them when the tank goes over the trench. The merits and construction of this type of trenches is discussed in this article.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

A review of some of the combats that have taken place in secondary theaters of operations—among them Oviedo, Toledo and Cordoba, and also the fighting around Bilbao.

11 June 1937

BRITISH STRATEGY.
[Britische Strategie.] General Wetzell

A review of Captain Liddell Hart's book, "When England Goes to War." According to General Wetzell, British strategy is twofold: (a) immediate intervention, by the use of the fleet at such places as may best destroy the economic resources of the adversary; (b) assistance to her allies by supplying funds, arms and war materials.

ATTACK AND DEFENSE OF SEACOASTS.
[Küstenangriff und -verteidigung.] (I) Lieut.Colonel Winkelmann

Books on the above subjects are not very numerous in military literature and the author in this article discusses some examples of this type of operations in past wars, and then reviews the operations at Gallipoli and the German landings in the Gulf of Riga.

MODERN CAVALRY.
[Neuzeitliche Truppenkavallerie.] Captain van Nes

Comments on the article, "Must Cavalry Fight?", appearing in the 21 May 1937 issue of "Militär-Wochenblatt." The remarks made are based on the accomplishments of many cavalry regiments during the World War.

18 June 1937

MOTORS, THE GREAT HOPE.
[Der Motor, die grosze Hoffnung.] Lieut.Colonel Däniker

The motor is the great hope for a return to the war of movement. There was a tendency before the war to underestimate important combat

means; there is now a tendency to overestimate them. Without detracting from their importance, the question seems to be whether or not mechanized forces will be capable of accomplishing the big things expected of them and function with the desired efficiency.

ATTACK AND DEFENSE OF SEACOASTS.
[Küstenangriff und -verteidigung.] (II) Lieut.Colonel Winkelmann

A discussion of the lessons to be learned from the British maneuvers of February 1937, on the attack on Singapore.

TYPES OF FIRES OF THE FRENCH ARTILLERY IN THE ATTACK AND IN THE DEFENSE.
[Feuerformen der französischen Artillerie in Abwehr und Angriff.] Major Stuckenschmidt

According to the author, the French Regulations of 1936 prescribe specific instructions for the defense, but there is nothing definitely said concerning "delaying actions," except the remark that the types of fire must adjust themselves to the "situation." Counterpreparation fire (tirs de contre-preparation) is used when the enemy's intentions are known and is participated in by the division heavy artillery only. The division light artillery, 75-mm, remains silent until the enemy's infantry attack is launched. In general, there is agreement in the schools of thought in France and Germany as to the employment of artillery in the defense. However, there is a marked difference of opinion as to the employment of artillery in the attack. The artillery support may be in the form of a rolling barrage or by successive concentrations. The author also discusses counterbattery fires, which is a mission of the corps and army artillery, both in the defense and in the attack. In general, the French Regulations show the great importance that the French attach to the effects of mass and surprise.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

A review of the lessons to be learned from the Spanish War, with particular reference to modern weapons, tanks and antitank guns.

25 June 1937

ARTILLERY SUPPORT IN THE ATTACK.
[Die artilleristische Unterstützung des Angriffs.]

An increase in the offensive weapons of the infantry is not as essential as an increase of artillery fire-power, because infantry fire can never possess the material or moral effects of artillery fire.

TACTICS OF BOMBING ATTACKS.
[Bombenangriffstaktik.] Colonel Nagel

The French General Rougeron outlines in his book, "Bombardment Aviation," the way in which bombing attacks should be carried out. Modern artillery (10-13-cm) renders foolhardy attacks at less than 15,000 feet in clear weather, and suggests, therefore, that during the approach, as well as during the attack, maximum use be made of clouds, in daytime as well as night. The author comments and gives in detail the methods advocated by General Rougeron in his book.

THE MILITARY VALUE OF FRONTIER FORESTS.
[Der militärische Wert des Grenzwaldes.] A.W. Boback

There is a diversity of opinion concerning the value of forests near frontiers. While some deny their value, others believe that they afford many advantages to the defense. This article discusses the value of frontier forests in the past and the value that various countries give them in future wars.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

In this installment the author deals with the lessons learned so far, particularly concerning aviation and antiaircraft artillery.

2 July 1937

THE IMMORATAL CAVALRY.
[Unsterbliche Kavallerie.] Lieut.Colonel Braun

On the night 25-26 August 1922, the Turkish Cavalry Corps under command of General Fahreddin Pasa, slipped through a gap on the Greek front, and, advancing along a narrow trail, attacked the enemy in flank and rear. The purpose of this article, the author states, is not to write against motorization, but in favor of the horse and the cavalry.

TERRAIN EXERCISES FOR OFFICERS.
[Offizierfelddienstübungen der Infanterie.] Lieut.General Boltze

Before the World War, infantry captains and lieutenants were required to solve annually one terrain exercise, carrying out a given mission. It is recommended that this practice be reinstated, adopting the problems to present conditions.

EMPLOYMENT OF MOTORIZED MACHINE-GUN UNITS.
[Gedanken über die Führungstechnik motorisierter MG.-Einheiten.] (I) Major Ponath

Motorization and the employment, at times, of this type of unit on independent missions, makes it necessary to be acquainted with the experiences gained in other armies in handling these newly created units.

COLONIAL MILITARY FORCES.
[Die militärischen Kräfte in den gröszeren Kolonien.]

A study of the forces maintained by Great Britain, France, Italy, Japan and the United States in their colonial possessions, shows that France and Italy maintain a larger number of troops abroad than any of the powers mentioned above.

9 July 1937

UNTIL WHEN?
[Quousque tandem?] Lieut.General Marx

General Marx states that military literature today reveals a great monotony of thought concerning the World War, since practically every new book does nothing but repeat the eternal song of the 1914-1918 Campaign; the Schlieffen Plan and the Battle of the Marne are constantly mentioned, over and over again. The same old reproach that the old army neglected certain things, is heard. It is time, be believes, to forget the past and discuss new problems under present or future conditions.

THE EMPLOYMENT OF OBSTACLES IN SOUTHERN POLAND IN OCTOBER 1914.
[Die Unwendung von Sperrungen beim Feldzug in Südpolen Oktober 1914.] Captain Meltzer

Extensive use of obstacles, or "demolitions" as they were then called, was made during the Polish Campaign of 1914. Since the use of obstacles has become so important today on account of motorization and mechanization, the author believes it useful to make an analysis of the employment of obstacles in that campaign and their probable use in future wars.

COMPARISON OF THE STRENGTH OF MODERN ARMIES DURING THE WORLD WAR.
[Das Stärkeverhältnis moderner Heere im Kriege.]

According to statistics, Germany mobilized about 15% of her total population during the World War; out of 67 million inhabitants, 10 million saw military service. Such a proportion is out of the question today, because the manufacture of modern arms, tanks, airplanes and other weapons requires an industrial army at home. For example, it has been estimated that each automatic weapon requires the labor of from seven to eight persons and, therefore, an infantry battalion equipped with 40 automatic weapons would require about 300 workers at home. Under these conditions, Germany instead of mobilizing an army of ten million men, as she did during the World War, will only be able to mobilize a little over eight million. This article also contains very interesting remarks concerning the large number of men that will be required at home and in the field, due to motorization and mechanization in the armies.

16 July 1937

WAS THERE A POSSIBILITY OF DECIDING THE WAR ON THE WESTERN FRONT IN 1916?
[Gab es 1916 eine Möglichkeit der Kriegsentscheidung im Westen?] General Wetzell

So much has been published on the operations on the Western Front in 1916, that Falkenhayn's plan at Verdun may be intelligently analyzed. The Verdun offensive was doomed to fail because of insufficient German forces. Such being the case, General Wetzell believes that, perhaps, it might have been wiser to have accepted General Conrad von Hötzendorff's (Austrian) plan to seek a decisive victory by a strong offensive against Italy.

OPERATIONS OF MECHANIZED UNITS.
[Mechanisierte Verbände und Operationen.] Major General Dihle

Comments on Colonel Lancon's (French) article published in the "Revue Militaire Francaise," in which the French officer maintains that motorized and mechanized units will be able to stop the tactical maneuvers which are now made possible through the development of modern weapons.

THE "IMMORTAL" MACHINE GUN.
[Das "unsterbliche" Maschinengewehr.] Captain Schützinger

A discussion of the lessons learned in the World War concerning the employment of machine guns and infantry tactics.

MILITARY AND POLITICAL PROBLEMS OF SCANDINAVIA.
[Skandinavische Wehrprobleme.] P. Nietert

The new Russian system of communications in Murmansk, the increase of population and resources in this region, and the ever-increasing motoriza-

tion, are some of the reasons which explain Sweden's necessity for preparations against a Russian invasion through Finland. The recent Swedish winter maneuvers furnished valuable military lessons. Use was made of motorized battalions to open snow-covered roads, canvas tents were provided with stoves, a new type of winter shoes for soldiers, and ski units were tried out and sleds were utilized to transport machine guns. The author discusses the probabilities of a Russian invasion in Northern Scandinavia and the defense of Norway and Sweden.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

An account of the Insurgents' preparation, preliminary to the capture of Bilbao and the circumstances which led to the death of the unfortunate General Mola.

23 July 1937

THE ARMOR PROBLEM.
[Das Panzerproblem.] General v.Eimannsberger

Comments on an article published in the "Militär-Wochenblatt" (No. 49), entitled "The Motor, the Great Hope," by Colonel Däniker. General v.Eimannsberger believes that the usefulness of the armored car is rather limited. He also discusses its employment and the importance of aviation against tanks.

EMPLOYMENT OF MOTORIZED MACHINE-GUN UNITS.
[Gedanken über die Führungstechnik motorisierter MG.-Einheiten.] (II) Major Ponath

A continuation of a previous article on the same subject. Major Ponath analyzes the employment of the above type of units as follows: (1) As a protection during the approach march; (2) During combat; (3) In attack and defense.

STRATEGIC RECONNAISSANCE.
[Aufklärung vor der Heeresfront.] v.Gonnermann

It is believed that in future wars, motorized units will carry out army reconnaissance missions, such as the cavalry performed during the World War. Some examples from the Great War are given, with comments on the manner in which motorized reconnaissance units of today would carry out the same missions. (See abstract, page 105)

NEW MOTORIZED UNITS IN THE ITALIAN MANEUVERS.
[Neue italienische Motoreinheiten im Manöver.]

The following three types of divisions will be tested in the forthcoming Italian maneuvers: Mechanized, portee, and fast (celere); also the mechanized brigade, the primary mission of which is to break through organized defensive positions. Special attention will be given in these maneuvers to lines of communication and to the supply of motorized units in a rapid advance.

THE SPANISH WAR.
[Vom spanischen Krieg.] Colonel v.Xylander

A description of the fall of Bilboa.

MILITARY ENGINEER

September-October 1937

MECHANIZATION AND MOTORIZATION. Lieut.Colonel Gross
TRANSPORTATION FOR PONTON EQUIPAGE. Captain Young
THE DEFENSE OF SPAIN'S COLONIAL EMPIRE. Lieutenant Kutz
STRATEGIC MINERAL SUPPLIES. 11. IODINE. Major Roush

November-December 1937

THE ORGANIZATION OF THE BRITISH ARMY. Major Reynolds, Royal Artillery, Retired
THE NEW FOOT BRIDGE EQUIPMENT. Captain Young
MOUNTAIN WARFARE. Pasdermadjian
WATER PURIFICATION IN GARRISON AND FIELD. Captain Browne
STRATEGIC MINERAL SUPPLIES. 12. NITROGEN. Major Roush

MILITARY SURGEON

August 1937

WEAK FOOT AS A DISABLING DEFECT AMONG EX-SERVICE MEN. Harris

September 1937

A DISCUSSION OF THE MEDICAL SERVICE (WAR STRENGTH) OF THE PROPOSED INFANTRY DIVISION. Major Martin

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NAVAL INSTITUTE PROCEEDINGS

August 1937

NAVAL STRATEGY IN THE ADRIATIC SEA DURING THE WORLD WAR. Prof. Sokol
AERIAL ATTACKS ON FLEETS AT ANCHOR. Lieut.Commander Ramsey
MONGOL ARMADA. Lieut.Commander Howell

September 1937

LEADERSHIP CANNOT BE TAUGHT. Lieutenant Rucker
THE ADMINISTRATION OF ENLISTED PERSONNEL. Lieut.Commanders McCartin and Bledsoe
PROMOTION OF OFFICERS IN THE BRITISH, JAPANESE, FRENCH, AND GERMAN NAVIES. Radom

October 1937

OUR ARMOR OF SELF-CONTAINMENT. Lieut.Commander Talbot
IS WAR INEVITABLE? Dr. Hovgaard

November 1937

TRAFALGAR, THE DEATH KNELL OF AN ALLIANCE. Lieut.Commander Moran
MILITARY LEADERSHIP. Captain Carlson

PIONIERE (Germany)

By Major E.M. Benitez, Coast Artillery Corps

May 1937

TRAINING OF ENGINEERS FOR COMBAT.
[Ausbildung der Pioniere im Gefechtsdienst.] (II) Captain Meltzer

Continuation of an article begun in a previous issue. Training with the rifle, according to the author, is the most important phase of individual training; instruction should also be given in making the best use of the terrain, selection of targets, adjustment of sights and control of fire. This training should be followed by instruction in the use of light machine guns.

PORTABLE OBSTACLES.
[Schnellsperren.] Major von Ahlfen

Portable obstacles can be used to good advantage in conjunction with machine guns and tanks. They should be able to stop vehicles on roads, be easy to handle and capable of easy erection, must cover the gap and also be covered by fire.

EMPLOYMENT OF A MOTORIZED ENGINEER BATTALION IN ERECTING OBSTACLES IN DIVISION OPERATIONS.
[Sperreinsatz des tmot. Pionier-Bataillons im Divisionsverband.] Captain Betz

The author discusses the employment of motorized engineers in operations covering advance, attack, defense, delaying action and withdrawal.

ANTITANK DEFENSE FROM A FRENCH VIEWPOINT.
[Eine französische Ansicht über Panzerabwehr.]

Since Germany has repudiated the Treaty of Versailles, which placed a ban on tanks in the German army, the French must make the necessary preparations for defense against tank attacks. The terrain for defense should be carefully selected, taking advantage of rivers, swamps, woods and similar ground unfavorable for tank action. Artificial obstacles, such as trenches, ditches, piles and the like should be provided. The infantry should be furnished with efficient antitank weapons.

ARMORED ENGINEERS.
[Panzerpioniere.] Lieut.Colonel Koller-Kraus

Armored sappers would be very valuable to remove mines and obstacles. They should be equipped with suitable equipment for this type of work as well as for bridge construction.

MILITARY GEOLOGY AND WATER SUPPLY ALONG THE BELGIAN COAST IN 1915.
[Kriegsgeologie und Truppenwasserversorgung an der belgischen Küste 1915.] Major Kranz

The Belgian coast may be divided into three parts: the line of dunes along the seacoast where water is scarce, the marshy area next to it where water is often polluted with decaying vegetation, and the inland plain where large open wells provide better water supply. During the World War, the German armies suffered heavily due to lack of good water. According to the author, close cooperation must exist between the army geologists

and the medical service. This combination enabled the Marine Corps to solve the water supply problem in Belgium in a satisfactory manner.

ROADS IN THE WAR AREA.
[Straszen im Kampfgebiet.] Major Strobl

A comparison of the American and Italian ideas on road construction at the front. The great variety of vehicles in the army today has complicated the road problem.

A PRUSSIAN ENGINEER OFFICER AS WAR CORRESPONDENT.
[Ein preuszischer Pionieroffizier als Kriegsberichterstatter.]

A biographical sketch of the life of Major Scheibert, a Prussian officer, born in 1830, who fought in Italy in 1859 and later on in America with the Confederates in the Civil War.

PROTECTION OF THE DUTCH-GERMAN FRONTIER DURING THE WORLD WAR.
[Deutsche Grenzsicherungen gegenüber Holland im Weltkriege.] Colonel Biermann

After the landing of the Allied troops at Salonika in 1915, the Germans became alarmed over the security of the Dutch-German frontier. A hostile landing at Scheldt would have enabled the Allies to launch an attack against the rear of the German Fourth Army. Moreover, forces landed in Holland could not only have reached the submarine bases at Ostende and Zeebrugge, but even reached the U-Boat stations in Heligoland Bay. In order to prevent an Allied attack through Holland, the Dutch-German frontier was fortified and prepared to resist any enemy landing forces.

THE ROMAN BOUNDARY WALL IN UPPER GERMANY AND RHAETIA.
[Der Limes, die römische Grenzsperre in Obergermanien und Rätien.] Major Herrmann

A description of the wall, constructed by the Romans during the reign of various Emperors, outlining the limits of the Roman Empire between Coblenz on the Rhine and Regensburg on the Danube.

CONSTRUCTION OF THE WINSKE BRIDGE AT OPPELN BY THE 8TH ENGINEER BATTALION.
[Bau der Winske-Brücke in Oppeln durch Pi.Btl. 8.] Captain Bernhardt

A description of the pile bridge constructed by the 8th Engineers over the Winske River, at Oppeln.

ENGINEERS SAVE THE HAMBURG ELECTRIC LIGHT AND POWER SUPPLY.
[Pioniere sichern Hamburgs Versorgung mit Licht- und Kraftstrom.]

An account of how two engineer battalions saved the electric power station on the Neuhof ship canal in January 1937, by constructing a dam of sandbags filled with lumps of frozen clay.

QUARTERMASTER REVIEW

July-August 1937

BRITISH G.H.Q. IN FRANCE, 1918. Lieut.Colonel Frink
UNCLE SAM GOES TO MARKET. Lieutenant Witt
QUARTERMASTER STOREHOUSE OF KNOWLEDGE

September-October 1937

SHANGHAI—GATEWAY TO CATHAY. Redmond
THE ROCK OF CHICKAMAUGA. Lieut.Colonel Yenchar
DEVELOPMENT OF THE TRACTOR
QUARTERMASTER STOREHOUSE OF KNOWLEDGE

RESERVE OFFICER

September 1937

LIGHT TANKS FOR GENERAL UTILITY. Major Fleming
FIGHTING A CHEMICAL PLATOON. SOME NOTES ON THE OPERATIONS OF THE FIRST GAS REGIMENT, A.E.F.

October 1937

THE ARMY AIR CORPS. A RECENT PHOTOGRAPH. Major General Westover
OIL: MORE THAN A BURNING QUESTION. Major General "A"
FOURTH ARMY MANEUVERS. Major Fleming

November 1937

THE ARMY GOES MODERN. Major Barker
A NEW EPOCH OF FIELD ARTILLERY. Major Fleming

REVUE DE L'ARMEE DE L'AIR (France)

By Colonel L.H. Brereton, Air Corps

April 1937

THE AVIATION INDUSTRY AND NATIONAL DEFENSE.
[L'Industrie aéronautique et la défense nationale.] Senator La Grange

A critique of the aviation industry emphasizing the necessity of controlling the raw material sources necessary for military needs and enlarging and controlling the manufacturing facilities for mass production.

ADAPTATION OF TRENCH DIGGING MACHINERY IN DEFENSE AGAINST AIR ATTACK AND TO CONSERVE MAN POWER.
[Conséquences aéronautiques du creusement mécanique des tranchées.] Captain Etienne

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NOTES ON THE DEVELOPMENT OF FRENCH MILITARY AVIATION.
[Notes et souvenirs sur la création de l'Aviation militaire francaise.] (VI) Lieut.Colonel Bellenger

PARLIAMENTARY DEBATE ON THE NATIONAL DEFENSE.
[Un grand débat parlementaire sur la défense nationale.]

An extract of the hearings in the Chamber of Deputies on the budget for National Defense, January and February 1937, with extracts of the remarks of M. Pierre Cot, Minister for Air.

May 1937

SEARCHING THE COMBAT ZONE.
[Recherche du champ de bataille.] Captain Thoumin

The air observer should be trained in the study of terrain features of every description which might prove of value to the staff in determining enemy capabilities of movement, defense and offense. He should have a competent knowledge of the tactics and technique of the associated arms. Possessing such knowledge, certain terrain characteristics and formations will draw his close attention automatically, and may disclose information which was not foreseen.

The mission assigned to the observer must have first priority. Such specific missions, however, usually demand information to verify or deny a hypothesis. To confine the trained observer only to the acquiring of the "essential element" of information desired does not fully utilize his capabilities. He should inform the command of anything seen that night tending to clarify the situation. The results of such reconnaissance may indicate to the command additional enemy capabilities and hypotheses on which to base further specific reconnaissance.

NEUTRALITY OF THE AIR.
[La neutralité du ciel.] Commander Barjot

The principle of neutrality of the air was recognized at the Hague in 1923, but the agreements reached by the delegates at that Conference were never ratified. Since that time, aviation has made considerable progress; aircraft can now fly much higher, above the clouds, and also fly by night, so that it is increasingly difficult to determine violations and make neutrality of the air respected.

Since the beginning of the Civil War in Spain, the papers have reported clandestine flights across Austria by groups of planes apparently bound, via Italy, for the theater of operations. On 17 April 1937, the Valencia government declared that the insurgents were receiving airplanes from Germany, which crossed French territory by night, at high altitudes.

The World War showed that neutral states bordering upon belligerents, were compelled to use force to maintain the neutrality of their air. Control on land and sea has been established in the Spanish Civil War, but it has been impossible to maintain air control.

An European war today would probably involve only a limited number of states. The others would attempt to maintain a strict neutrality, which might go as far as an economic and military blockade of the belligerents. In the air, however, the door is open, and seems to be opening more widely. Today, the most serious problem to be solved is that of neutrality of the air. It is up to the League of Nations to study this problem and find a solution.

USE OF RADIO COMMUNICATION IN THE AIR ARMY.
[Essai sur l'utilisation de la radiotélégraphie dans l'Armée de l'Air.]
Captain Luce-Catinot

A suggested outline of regulations to improve radio procedure and employment in the air army.

EVOLUTION OF THE OBSERVATION AIRPLANE.
[Evolutions des avions de coopération.] R.A. & E. Schlumberger

A technical article showing disadvantages of biplane construction for air observation and disadvantages of certain types of low wings as affecting field of view.

NOTES ON THE DEVELOPMENT OF FRENCH MILITARY AVIATION.
[Notes et souvenirs sur la création de l'Aviation militaire francaise.] (VII) Lieut.Colonel Bellenger

June 1937

AIR FORCE IN THE LANDING ON A HOSTILE SHORE.
[L'aviation dans une opération de débarquement.] (Editorial)

The editor indicates the value of studies to determine the capabilities of air forces in landing operations, and in defense against landing operations.

AIR GUNNERY IN THE PURSUIT AND THE WITHDRAWAL.
[Le tir en chasse et le tir en retraite dans le combat aérien.] Chief Engineer Brissot

A continuation of the discussion involving the theoretical superiority of the fire to the rear of an airplane against the forward fire of a pursuer. Previous discussion of this subject appeared in the September 1936 issue of "Revue de l'Armée de l'Air" (see March 1937 issue of the Quarterly). The author concludes that from the ballistic viewpoint, the fire of the pursued is superior to that of the pursuer. This superiority has a definite and increasing practical application and must be recognized in the tactics of pursuit aviation.

SEAPLANES FOR COLONIAL SERVICE.
[Hydravions coloniaux.] Captain Gaudillère

A discussion of the capabilities of seaplanes and hydroplanes in service in tropical colonial possessions, and in theaters lacking in ground landing facilities.

SERVICE TESTS OF VARIOUS TYPES OF SKI LANDING GEARS.
[Etudes et essais de skis pour avions.]

AIR BATTLE, PAST AND FUTURE.
[Combats aérienes d'autrefois et de l'avenir.] Captain Hénot

Description of an air combat in the World War, and a hypothetical air operation of the future.

REVUE D'ARTILLERIE (France)

By Major R.G. Tindall, Infantry

April 1937

THE FIELD ARTILLERY GROUPMENT IN THE MODERN APPROACH MARCH.
[Le groupement d'artillerie de campagne dans la marche d'approche moderne.] Colonel Ricard

A concrete case is studied by the author. There are only slight differences between his proposed solution and characteristic French practice of recent years. The principal point appears to be that the normal artillery position during the approach march no longer need be close to the outposts. This formerly was the rule because of the difficulty of communications. This has been eliminated largely by better radio equipment. Therefore positions farther in rear, permitting closer support of the infantry (the

flatness of the trajectory being eliminated) and providing greater protection against incursions of hostile armored vehicles, are favored.

A METHOD OF ADJUSTING FIRE WITH LATERAL OBSERVATION.
[Un procédé de réglage du tir dans l'observation laterale.] Lieutenant Denis

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SMALL APPARATUS TO REPRESENT SHELL FIRE FOR INDOOR AERIAL OBSERVATION EXERCISES.
[Dispositif réduit de figuration des feux pour les exercices avec observation aérienne.] Captain Michaud

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INFLUENCE OF A DIFFICULT ROUTE ON THE TIME LENGTH OF A COLUMN OF VEHICLES. THEORETICAL STUDY.
[Influence d'un itinéraire difficile sur l'écoulement d'une colonne de voitures. Etude théorique.] Lieut.Colonel Desrousseaux

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AIR TRANSPORTS AND DISEMBARKATIONS. PARACHUTING.
[Transports et débarquements aériens. Parachutisme.]

A study of various articles in the foreign press dealing with transport of troops by air, and parachute landings behind the hostile front. The majority of the authors cited are of the opinion that it is fairly easy to parry the dangers of aerial disembarkations of hostile troops, provided the danger is realized and that proper defensive organization is made in time and coordinated with the aerial defense of the country.

May 1937

DIRECT SUPPORT ARTILLERY DURING THE ADVANCE TO CONTACT.
[L'artillerie d'appui direct dans la prise de contact.] Colonel Ricard

The author points out that this phase is likely to be prolonged because of the increase of motorization. The natural tendency now is for artillery supporting advance infantry echelons to displace by batteries within the battalion. This is permitted because of the new ER 22 radio. Formerly the displacement by battery was not favored by the author. The subject of artillery during the advance to contact is studied particularly from the point of view of an artillery groupment commander.

TRANSFER OF FIRE.
[Le transport de tir.] General Bloch

THOUGHTS ON THE STUDY OF THE PERSPECTIVE PLANE.
[Contribution à l'étude du plan perspectif.] Captain Blanquefort

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SHORT HISTORY OF FLASH AND SOUND RANGING.
[Historique sommaire du repérage.] Major Basset

Prior to the World War the French fortress artillery had taken a few steps toward flash ranging and there had been some sound range experiments but nothing very practical had been realized. The early days of the war showed the necessity for flash and sound ranging, and French scientists immediately tackled the question. Colonel Nivelle (later the generalissimo), who then commanded an artillery regiment, assembled the physics experts

of his command and put the matter up to them. M. Nordmann, an astronomer at the Paris observatory, mobilized as an artillery corporal of Nivelle's command, had the idea of using, in order to measure time, the apparatus used in observatories and which was extremely precise. The difference in time at which sound of a hostile gun was heard at several known points could thus be ascertained and this solved the problem theoretically. Tests were made in October 1914 and soon the system was installed at the front. The first results were only fair, but gradual improvements were made. It was not until 1918 that the system reached its full development. At the time of the Armistice the French flash and sound ranging unit contained 300 officers and 6,000 men.

June 1937

THOUGHTS OF AN ARTILLERYMAN.
[Impressions d'artilleur.] General Dumas

The author begins an article in which he demands artillery aviation, and reviews the slow progress of artillery firing technique. He pays tribute to the late General Estienne who at least started artillery aviation. His article consists in part of an imaginary conversation between a cannon and an artilleryman. The gun bitterly reproaches the gunner with not having known how to make the best use of his material, and sums up the sins of the artilleryman as follows:

> "You have taken 10 years to prescribe the signals for commanding fire, 12 years to provide too parsimoniously an unsatisfactory telephone, 5 years to learn how to use it, 17 years before learning my aptitude for masked or indirect fire. Thus in 17 years you did not become equal to me."*

It appears that the French artillery is about to be provided with autogiros, so that the ideas of General Estienne, who urged artillery aviation before the World War, will be realized.

TRAINING THROUGH PICTURES. A MODERN METHOD OF FIXED PROJECTION.
[L'instruction par l'image. Un procédé moderne de projection fixe.] Major Mouerton

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PLACING ALTIMETERS, MODELS 1916 AND 1917, IN POSITION.
[Mise en station des altimètres modèles 1916, 1917.] Captain Faddegon

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THE DIVISION ARTILLERY. BITS FROM AMERICA AND ELSEWHERE.
[L'artillerie divisionnaire. Gibernes d'Amérique . . . et d'ailleurs.] Major Maire

A theoretical discussion concerning whether the division artillery should contain a certain number of 105-mm howitzers. The conclusion drawn is that upon comparatively flat and open country a ton of 75-mm shells will produce a greater effect against exposed personnel than a ton of 105-mm shells, and that the lightness of the 75-mm gun and its ability to act against armored vehicles make it superior to the 105-mm howitzer in the plains. However, in broken country, and mountains, the 75-mm gun will be unable to reach many objectives and the 105-mm howitzer will be of the greatest value. The conclusion appears to be that a certain proportion, but not all of the light division artillery should consist of 105-mm howitzers.

*The 17 years referred to are from 1897 to 1914.

FAST DIVISIONS AND THEIR ARTILLERY.
[Les divisions rapides et leur artillerie.]

A study of recent articles appearing in Italian military periodicals concerning the employment of artillery with the fast divisions of Italy. The concensus of opinion favors considerable decentralization and the practice of the simplest and most rapid methods of preparing fire. The 105-mm battalion, how included in the organization of the Italian fast division should be replaced by another 75-mm battalion, making three 75-mm battalions in all, in the opinion of General Trezzani.

REVUE DE CAVALERIE (France)

By Major L.K. Truscott, Jr., Cavalry

March-April 1937

THE DEVELOPMENT OF MOTORIZATION IN THE ARMY. ITS CONSEQUENCES IN WHAT CONCERNS THE CAVALRY.
[La développement de la motorisation dans l'armée. Ses conséquences en ce qui concerne la cavalerie.] By General Boucherie

(See abstract, page 130)

THE APPEAL OF THE T.O.E. (TERRITORIES OF EXTERIOR OPERATIONS).
[L'appel des T. O. E.] By X...

The article outlines the importance of colonial service as a training school for officers. The author quotes Lyautey who says that in six months of colonial service a young officer or noncommissioned officer expends more energy and initiative and develops more maturity than in twenty-five years of garrison service in France. He emphasizes that this service is not only a school of administration, politics, and economy, but a school in all operations of war. He illustrates by citing several young officers who have distinguished themselves in recent years, as well as Bugeaud, Lyautey, and others.

THE CAPTURE OF A GERMAN FLAG BY CAPTAIN SONNOIS, 3D HUSSARS, 10 SEPTEMBER 1914.
[Prise d'un drapeau allemand par le 3e hussards, 10 septembre 1914.] Major Dufour

Captain Sonnois, accompanied by one sergeant, was separated from his command while on reconnaissance and prevented by the enemy from rejoining. Learning from an inhabitant of the presence of a German detachment of about 15 men with an encased flag in a village, he surprised them in a house, captured the flag and three prisoners, the sergeant arriving in time to disarm them. The flag was sent by him to the Invalides.

THE ANGLO-ARAB BREED.
[La race anglo-arabe.] Captain de Bellabre

This article is an interesting account of the Anglo-Arab breed. The author traces the historical origins of the foundations of the breed from the original native stock to the present time. To qualify as an Anglo-Arab a horse must possess at least 25% of Arab blood. There are two classes: those possessing at least 25% Arab and not more than 75% English (thoroughbred); those possessing at least 50% Arab and 50% English. The author outlines the characteristics of the breed, describes the system of

breeding in some detail, and indicates some of the oustanding performances by individuals of the breed in various competitions.

THE REPAIR OF OVALIZED CYLINDERS.
[Chronique automobile.—La réparation des cylindres ovalisés.]

The author states that two types of vehicles are used by the army: commercial types, and special military types. Commercial types can be rebuilt when repairs become important or too frequent, because the value of the body is much less than its mechanical parts. This is not the case with special military vehicles like tanks because armored bodies and particular parts represent the principal cost. Consequently, they are continued in service until outmoded by technical progress, and until they can be obtained in sufficient numbers to take the place of the old.

In interest of means that permit prolonging the life of these vehicles, the author considers the repair of ovalized cylinders, considering the normal method of reboring, and a more modern method of jacketing.

May-June 1937

REACTION OF MECHANICS ON THE EQUIPMENT AND ORGANIZATION OF UNITS.
[Réaction de la mécanique sur l'équipement et l'organisation des unités.] By X...

Armored vehicles, the author states, are helpless by night and against the interior of woods. Mechanized units must therefore be ready to work in combination with other troops, particularly with aircraft. He then takes the case of the new French cavalry division, composed of horsed and mechanized units. On the march, the latter will be employed for reconnaissance and protection. If the main body is constituted mainly of horsed troops, the mechanized units cannot venture as far ahead as their superior mobility might lead them; they will therefore, spread far out to the flanks. What of the units supporting this mechanized reconnaissance? Theirs is a difficult task which includes:

To relieve mechanized units, when the latter have become engaged in a hot fight so as to allow the mechanized portion to move ahead.
To profit from the neutralization of enemy fire by the mechanized units, with a view to crossing fire-swept ground.
To complete the task of the mechanized units in "mopping up" cover safely occupied by the enemy.
In the face of hostile mechanized attack to scatter with all speed and avoid such attack.

Speed, therefore, is the prime necessity and to that end everything tending to take up time in the matter of equipment must be eradicated. Horsed units, covered by mechanized units, should from the nature of the case be able to progress in a fashion hitherto unattained.

The main threat remains the attack of an enemy armored force, and the main body of horsemen in a cavalry division dare not run the risk of being thus caught. A cavalry division, after reinforcing the advance guards, should, therefore, advance by bounds; it must move swiftly from line to line. To this end motorized infantry and motorized artillery will serve to combine speed with caution. The horsed units can then move more easily and rapidly without need to make frequent halts. The same argument applies to a systematic attack against a more "solid" position.

Everything points to two conclusions: first, the need to lighten the individual and thereby to increase his mobility; second, the need to redistribute the heavier units and to reorganize their transportation. Consequently horsed units should act, first and foremost, as riflemen with a minimum of machine guns and antitank weapons; while all the bulk of machine and antitank guns should be grouped into supporting units. The

latter would be equipped with cross-country vehicles and would act as distributors of their weapons when and where needed. A detachment would thus, at the right moment, receive a reinforcing truck containing 4 machine guns, 2 mortars, and 1 antitank gun together with a few specialists needed by them to work these guns. A group of such trucks would constitute a reinforcing unit. Another signal unit of a similar composition would ensure the setting up of adequate communications (telephone and radio). By such means lightness and mobility can be secured. Every effort must be made to reduce weight and to regroup the indispensable weapons. On the other hand, second line transport must not be augmented; in fact it must be cut down ruthlessly.

At present there is a need of a complete revision of what can be carried in the field. Motor traction does not justify the multiplication of vehicles to the extent that is now thought possible. The new transport must be studied from the standpoint of speed, and speed only.

NOTES ON INSTRUCTION OF MOTORIZED AND MECHANIZED UNITS. [Réflexions sur l'instruction dans les unités motorisées et mécaniques.] Lieut.Colonel Azais

Colonel Azais considers the question of training in a motorized or mechanized unit. He begins by reviewing the training now considered normal in a horsed cavalry regiment. This has been tested by experience and may be regarded as being much the same in every horsed unit. How far can this identical system be transferred to a motorized or mechanized unit? If the training in the latter be considered, it can be said to consist of:

Technical motor training, both theoretical and practical.
Tactical training in the use of the vehicle on the road and across country.
Marksmanship, combat firing and communications.
Specialists' training.

Technical training will be limited only by the amount of fuel that is made available for this branch of training. The utmost economy must therefore be practiced and enforced to obtain the best results. Special tracks must be made available and road tours must be designed for training. Theoretical training can be imparted indoors and should be conducted largely by means of very simple diagrams.

Tactical instruction must be varied for each type of vehicle—from the motorcycle to the tank. It is most important to avoid the familiar bare areas of ground that are found in proximity to most barracks. It is so important to find suitable ground for this training that it will pay to move the troops by truck to the ground that is suitable and to sacrifice time and fuel to this task rather than frequent hackeneyed and poor terrain.

Musketry training must be carried out on the assumption that every man of a motorized unit must be at least a good shot. Motorized infantry and motorcyclists must be well trained in marksmanship if the advantages of these units are to be realized. The whole musketry training of such a unit needs to be most carefully thought out and watched.

Training in signal duties is most important. The necessary detail of such training is obvious. The same can be said of the training of specialists; it needs no elaboration.

The main thing for a horsed unit converted to a mechanized organization is to break away entirely from the methods thought adequate in its days as a horsed unit and to think matters out from an entirely fresh basis.

REVUE D'INFANTERIE (France)

By Major R.G. Tindall, Infantry

April 1937

A NIGHT ENGAGEMENT: THE AFFAIR OF THE CHATEAU DE LA GRAVELLE, 5 SEPTEMBER 1914.
[Un combat de nuit: L'affairs du Chateau de la Gravelle, 5 septembre 1914.] General Douce

A detailed study of an engagement in which a French battalion surprised and captured a battery of the German Guard and then abandoned it. The action of each side is followed.

REFLECTIONS ON ADJUSTING MORTAR FIRE AND DESCRIPTION OF AN INDOOR SMOKE BOMB RANGE.
[Réflexions sur le réglage du tir des mortiers et description d'un appareil de tir fictif.] Major Foucher

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BATTALION WEAPONS' FIRE IN OFFENSIVE COMBAT.
[L'emploi des feux du battaillon dans le combat offensif.] Major Jourdan

Discussion of the methods by which a battalion commander arranges for supporting fires. The technique differs somewhat from former French habits, largely because of a slight change in organization, the battalion now having two 81-mm mortars and each rifle company one 60-mm mortar. The organic battalion thus has considerable curved fire-power.

THE AERO SALON; ITS INTEREST FOR THE INFANTRYMAN.
[Le salon de l'Aéronautique: son intéret pour le fantassin.] Captain le Gouest

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TRAINING OF INFANTRY LEADERS.
[Instruction des cadres de l'Infanterie: Etude de cas concrets.] Colonel Guigues

Discussion of a battalion map exercise for officers and noncommissioned officers and the method of conducting it.

May 1937

SAINT MAXIENT. Lieutenant Bousquet

An article on the French school which produces second lieutenants of infantry.

OFFENSIVE COMBAT IN THE LAST 200 YARDS.
Le combat offensif des 200 derniers mètres.] General Fabre

The author gives his conclusions based upon exercises which he directed in eighteen different infantry detachments. He considers the case of infantry attacking without the assistance of tanks, a case which will frequently arise, as he points out. He emphasizes the necessity for the platoon leader to have a plan for the advance during the last 200 yards and to put this into effect in time. The difficulties of the advance at a time when fire support from the rear has to lift are pointed out. The effectiveness of the light machine gun diminishes after it gets closer than 200 yards to the enemy, but that of the fire of the individual rifleman increases. He favors change

in the organization of the French group so that the number of riflemen will be increased at the expense of the size of the crew of the light machine gun. He desires to retain the present number of light machine guns in the platoon, however.

AN ARTILLERYMAN'S VIEW ON THE TACTICS AND TECHNIQUE OF THE 81-MM MORTAR.
[Considérations d'un artilleur sur la technique et la tactique d'emploi des mortiers de 81.] Major Foucher

The author considers that, contrary to the French Regulations, it is better to employ the mortars by single pieces than in groups of two. He does not believe a noncommissioned officer can handle two mortars and he points out that the attempt to adjust the fire of both mortars in battle will take considerable more time than to adjust one mortar and that meanwhile the enemy is not neutralized. He is strongly against the idea of grouping the mortars into batteries of four, six and eight pieces. He admits the efficacity of the fire of such batteries but considers them too slow and cumbersome and too vulnerable. He prefers that the infantry use the mortars for knocking out the nearest resistances, leaving to the artillery the more important resistances. He wants the ammunition supply of the mortars doubled and desires each battalion to have a platoon of three mortars (instead of the present section of two pieces) commanded by an officer.

CONCRETE EXAMPLES OF ANTITANK DEFENSE.
[Cas concrets de défense contre les chars.] (I) Captain Brouillard

First installment of an article dealing with antitank defense of today in the French army with the means actually available. (See abstract, page 87)

BATTALION COMBATS; OPERATIONS IN CHAMPAGNE IN SEPTEMBER 1914.
[Combats de bataillon: Opérations in Champagne in septembre 1914.] Lieut.Colonel Lavelle

A continuation of the account of the experiences of the French 114th Infantry. This installment includes the unit's surprise on the morning of 8 September 1914 by the Saxon Army's night attack which threw the right wing of Foch's Army into confusion.

INFANTRY-TANK LIAISON BY MEANS OF RADIO.
[La liaison "Infanterie-Chars" par les transmissions radio-électriques.] Captain Ferré

Proposals for procedure enabling better infantry-tank teamwork.

June 1937

SAINT-CYR. Candidate Nicolas

An article on the French "West Point."

GENERAL DESALEUX. Lieut.Colonel Le Brigant

Tribute to a French ballistic expert.

A SOLUTION OF A TACTICAL PROBLEM GIVEN IN THE COMPETITIVE EXAMINATION FOR ENTRANCE TO THE ECOLE DE GUERRE.
[Une solution du thème tactique proposé au concours d'entrée à l'Ecole supérieure de guerre.] Major X

REGIMENTAL HISTORIES: RANCOURT-VERDUN. AWARD OF FOURRAGERES TO THE 151ST INFANTRY.
[Chronique des régiments: "Rancourt-Verdun."—La remise de la fourragère au 151e R.I.] Mayer & Chapart

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GERMAN TACTICAL PROBLEM; STUDY OF A DECISION.
[Thème tactique allemand: étude d'une décision.] Major Quenot

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MECHANISM OF LONG-RANGE MACHINE-GUN FIRE IN DEFENSIVE OPERATIONS ON WIDE FRONTS.
[Mécanisme des tirs lointains de mitrailleuses dans la défensive sur les grandes fronts.] Major Perdreau

The author develops a method by which certain machine-gun sections scattered throughout a defensive position can concentrate their fires at long range upon sensitive points in front of a position.

AN OLD-TIME REGIMENT: THE ROYAL SWEDISH.
[Un régiment de l'ancien régime: "Le Royal-Suédois."] Captain Sereau

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CONCRETE EXAMPLES OF ANTITANK DEFENSE.
[Cas concrets de défense contre les chars.] (II) Captain Broiullard

(See abstract, page 87)

REVUE MILITAIRE GENERALE (France)

By Major R.G. Tindall, Infantry

April 1937

GENERAL STRATEGY A GOVERNMENT AFFAIR.
[La "Stratégie générale" affaire de gouvernement.] Lieut.Colonel Fabry

The former French Minister of War develops the theme that general strategy brings into play all governmental activities and is far beyond military leaders alone.

AIR AND ANTIAIRCRAFT COOPERATION FOR THE DEFENSE OF BELGIUM.
[La coopération aérienne et antiaérienne pour la défense de la Belgique.] General Armengaud

The author considers the effects of a general German offensive through Belgium and of an air offensive by Germany through Belgian skies against France. He concludes that this would soon develop into a general offensive through Belgium, and that eventually Great Britain would be drawn into the conflict, just as in 1914. He points out the great vulnerability of England to aerial attack, particu.arly if Germany should gain control of the Belgian coast.

His conclusion is that provision for the immediate participation of a powerful British air fleet in the defense of Belgium is essential for the maintenance of peace in Western Europe.

THE EVOLUTION OF CAVALRY TOWARD THE MACHINE.
[L'évolution de la cavalerie vers la machine.] General Boucherie

The author, who has directed the tests of French mechanized cavalry, discusses the causes of the evolution of cavalry and the forms and consequences of this evolution. He reviews the matériel now employed in the French army and the reasons which led to the French mixed horse and mechanized division. He is not a partisan of turning all the cavalry into mechanized cavalry at present although he points out that the evolution of cavalry toward the machine is being accentuated daily.

WAS BONAPARTE A GREAT MAN OR NOT?
[Bonaparte avait-il, ou non, grande valeur?] Lieut.Colonel Gallini

A response to a recent book by the Italian historian, Guglielmo Ferrero, on the campaign of 1796-97 in which Ferrero insists that Napoleon had little to do with French success in what is usually regarded as his star campaign. Lieutenant Colonel Gallini makes an exhaustive study of the campaign and refutes the conclusions of Ferrero. Colonel Gallini concludes that the summary of Napoleon's activity, which Ferrero insisted was a tissue of falsehoods, is entirely correct.

LANDINGS ON A HOSTILE SHORE.
[Les débarquements de vive force.] Lieut.Colonel Libéros

A study of several historical examples followed by conclusions as to proper modern procedure. The case of a landing made by a corps of three divisions is considered. The landing is made by two divisions.

The author favors the use of tanks to destroy defensive organizations on the beach, and concludes that the first echelon should land just before daybreak. He believes that the tanks, the division reconnaissance group and some infantry should land first and have the mission of establishing a beachhead the distance of small-arms fire from the shore. A second echelon composed in large part of motorized infantry and tractor artillery should hold a second beachhead (some 10 kilometers from the shore). The tanks and the reconnaissance group would push on to this second beachhead in advance of the second echelon. He suggests that for a division the following troops should be landed in the first two echelons:

Part of the division staff
Three staffs of infantry regiments
Three infantry battalions, one from each regiment
Three batteries of 75-mm guns, one from each battalion
One tank battalion
Reconnaissance group.

The author concludes that lighters capable of transporting 400 to 500 men and 20 vehicles (tanks, guns or trucks) are desirable for rapid landing. These lighters should be armored.

Naval vessels should furnish protective fires but not an artillery preparation (tank action will take the place of this), direct support (this will be done by tractor artillery when landed), or counterbattery and interdiction (this will be done by aviation).

Aviation will insure mastery of the skies during the critical period of the landing. It will bombard the enemy air bases, the batteries in action, reserves on the march, and in addition to normal battle missions, will land on the flanks and rear of the enemy special detachments charged with effecting certain important demolitions.

The author concludes that only the nations or groups of allied nations possessing an indisputable maritime and aerial superiority can consider such operations. Despite their difficulty, however, landing operations offer possibilities for great successes.

May 1937

THE COMMANDER-IN-CHIEF AND THE ARMIES OF THE AIR.
[Le commandement en chef et les armées de l'air.] General Armengaud

A suggestion for the organization of command involving army, naval and air forces. (See abstract, page 125)

STRATEGY AND ITS STUDY.
[La stratégie et son étude.] General Camon

The well known author insists that the great captains always used one particular system of maneuver and one particular battle system. He reduces the forms or systems of maneuver to four: maneuver against the hostile rear, the Leuctra or Frederician maneuver, Hannibal's Cannae maneuver, and the central action or interior lines maneuver. He states that Napoleon's battle system was derived from a study of Frederick's battle of Prague against the Austrians. The purpose of the entire article is to emphasize the study of strategy by French officers. The author advocates a special strategical college, the course of which would last three years.

AIR TACTICS DEPEND UPON MATÉRIEL.
[Le matériel commande la tactique (aviation).] Albert Courquin

A discussion of construction tendencies since the war. The French technicians have armed airplanes; the Germans have created "flying batteries." The author expresses a fear that the German tendency toward more effective long-range fire in the air might prove superior to the French conception and he points out the far-reaching consequences of the orientation given the technical services at present.

ARTILLERY SUPPORT OF INFANTRY IN THE OFFENSIVE WHEN TANKS ARE NOT INVOLVED.
[L'appui de l'infanterie par l'artillerie dans l'offensive, sans intervention de chars.] General Brossé

The author considers the case of an attack of a hastily organized position, but which nevertheless has a continuous, dense and deep system of fires. He first considers the question of an artillery preparation. Eliminating a preparation has three incontestable advantages: surprise is made more probable, the danger of a hostile counter preparation is lessened, and a large quantity of artillery munitions is saved.

The attack of 18 July 1918 is discussed as a typical example in which brilliant results were achieved without an artillery preparation. The author notes that the procedure used owed its success to the presence of four conditions which will be fulfilled but rarely. These were: the lack of any but mediocre ground organization by the Germans (particularly the almost total absence of barbed wire), the fact that the hostile batteries and emplacements had been spotted, since the opponents had been in contact in that vicinity for a month, the great artillery resources of the attacker which allowed the immediate and continuous neutralization of the hostile guns and automatic weapons, and finally the mass action of tanks was facilitated by the fact that the terrain was not torn up by artillery fire and that only a mediocre antitank defense was encountered.

General Brossé points out that an artillery preparation will be necessary every time when the attack must be supported by a relatively small amount of artillery. The attack surely will be crushed if the hostile automatic weapons are not neutralized at H hour, and this cannot be done by firing a trifling number of cannon shots. The whole war proves that a large number of projectiles are necessary to obtain this result.

In open warfare the tonnage of munitions necessary will be less than in 1918 because usually it will not be necessary to cut breaches in the hostile wire and the 75-mm gun will be very effective against personnel occupying holes or open emplacements.

The author rejects the idea that successive concentrations (unless almost continuous concentrations) will be an effective form of support. Nothing less than a rolling barrage with three series of fires will do: the rolling barrage proper, the combing fires of the 75-mm guns farther back, and finally, still farther in rear, the protective fires of the 155-mm howitzers.

To the question of whether such an extravagant use of projectiles is necessary today in open warfare, the author answers, "unfortunately, yes."

He concludes that when the attack does not have tanks, the attack will require five battalions of 75-mm guns and two of 155-mm howitzers to the kilometer, if it is to have any chance of success against a position where a dense, continuous and deep system of fires has been installed by the enemy.

He also concludes that the infantry mortars must play a large part in dealing with resistances which hold up portions of the attacking infantry. The mortars in general should fire on the near edges of the resistance, while the artillery deals with the more distant portions of the target. In this way the artillery can work faster, and is not so hampered by the fear of firing on its own infantry. Careful coordination between mortars and artillery is essential.

He discusses the advantages of curved trajectory fire and concludes that the French division should receive an additional weapon, the 105-mm howitzer as an organic weapon. He does not wish to replace the 75-mm gun or the 155-mm howitzer, but rather to add the equivalent of one battalion of 105-mm howitzers to the present artillery of the division. He prefers to add this battalion to the present light artillery regiment, rather than adding a battery of 105-mm howitzers to each 75-mm battalion, substituting a 105-mm howitzer battery for a 75-mm gun battery in each battalion, or a 155-mm howitzer battalion replacing a 75-mm gun battalion by a 105-mm howitzer battalion.

He also believes that a battalion of three batteries of six or eight antitank guns should be included in the division artillery.

DEFENSE AGAINST A GERMAN SURPRISE ATTACK.
[La défense contre une attaque allemande par surprise.] Colonel Epailly

Discussion of French mobilization and covering arrangements which would provide initial security against a sudden attack without upsetting the organization of the mass of the French forces.

June 1937

THE AERIAL DANGER AND THE PROTECTION OF CIVILIANS.
[Le danger aérien et la protection des populations.] General Niessel

A general view of the entire subject. The author concludes, however, that the best security for civilians lies in a powerful air bombardment fleet capable of exacting an eye for an eye and a tooth for a tooth from any enemy seeking to employ such measures of intimidation. The knowledge that energetic reprisals are certain to follow might well deter an adversary from inaugurating a campaign of air bombardment of civilians.

SUPPORT OF INFANTRY BY FAST TANKS AND ARTILLERY.
[L'appui de l'infanterie par les chars rapides et l'artillerie.] General Brossé

Tanks will be able to obtain considerable effects when acting against hostile troops in movement, or against an incompletely organized defense,

the author believes. However, against an installed defense, tanks called upon to operate a certain distance in front of infantry will have a difficult task which will result in heavy losses and the tanks' success will be quite uncertain.

At the start of a new European war all the armies of a nation will not be sufficiently rich in matériel to attack simultaneously. The operations, therefore, will not present the aspect of August 1914. Rather will the high command concentrate the majority of its matériel in the region where it has decided to make its effort, and the other portions of the battlefield will see defense action only.

In case the adverse system of defense is partially dislocated by the violence of the attack, the action of fast tanks will be particularly effective and success will be exploited with a violence and rapidity hitherto unknown.

THE TOWER OF BABEL.
[La Tour de Babel.] General de Cugnac

A plea for unity of command of all national defense forces.

UNITY OF COMMAND.
[Le commandement unique.] General Maginel

Discussion of the necessity of a single commander for national defense forces, or at least for an air-ground commander.

IMPERIOUS NECESSITY OF UNITY OF COMMAND.
[Impérieuse nécessité du commandement unique.] Captain Tourte

The author concludes that France should have at once, one single commander of defense forces, assisted by a strong staff.

ENGINEERS AND THEIR TEAMWORK WITH OTHER ARMS.
[La génie en liaison avec les autres armes.] Lieut.Colonel Rousseau

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REVUE MILITAIRE SUISSE (Switzerland)

By Major T.R. Phillips, Coast Artillery Corps

February 1937

PROBLEMS OF MILITARY MOTORIZATION.
[Problèmes de motorisation militaire.] (I) General Altmayer

Two lectures given by the French General Altmayer to the association of Swiss officers. The first lecture in this issue discusses the transformations made in warfare by the invention of new matériel.

REMARKS ON INDIRECT FIRE AND DISTANT FIRE BY MACHINE GUNS.
[Remarques sur le tir indirect et le tir lointain à la mitrailleuse.] Captain Daniel

A discussion of the distinction between the uses of indirect fire and distant fire by machine guns. The author concludes that indirect fire should be used at distances greater than 1,200 meters due to the difficulty of observation of direct fire beyond this range and to take advantage of opportunities

for masking machine guns. The Swiss machine gun sights can be used up to 2,600 meters for pointing. Beyond this range procedures of distant fire, analogous to those employed by artillery, should be used.

THE NEW INFANTRY SECTION.
[La nouvelle section d'infanterie.] Captain Nicolas

The instruction and command of the infantry section recently adopted by the Swiss army.

March 1937

OUR NEW MILITARY MAP.
[Notre nouvelle carte militaire.] Colonel Schneider

New military maps of Switzerland are to be surveyed and printed. The 1:50,000 map is scheduled to be completed by 1951, the 1:100,000 1956, and the 1:25,000 by 1976.

PROBLEMS OF MILITARY MOTORIZATION.
[Problèmes de motorisation militaire.] (II) General Altmayer

This lecture discusses the current French doctrines of the employment of motorized and mechanized units and defense against them. Motorized units have great strategical and small tactical value. They can be used only behind a protecting barrier. Mechanized units will precede the principal forces of the army, protect the motorized units which follow and establish a secure zone behind which the slower moving main bodies assemble by train and marching. The large cavalry units will find their principal role in filling the gaps between corps and armies.

THE INFANTERIES COMPARED.
[Les infanteries comparées.] Captain Nicolas

A comparison of the organization, armament and command of the infantry units up to and including the battalion, in the Italian, Austrian, Russian, French, German and Swiss armies.

FURTHER LESSONS FROM THE SPANISH WAR.
[D'autres lecons de la guerre d'Espagne.]

Douhet caused quite a sensation by his theory of massive bombardment on civil objectives in the interior of enemy territory, material and moral effects of an intensity such that all resistance would be abolished in a single blow. Panic and discouragement would seize the populations at the beginning of the conflict; the armies would then be reduced to impotence by the breaking down of their rears and the war would be gained at the outset by the nation which had thrown into the war the sufficiently formidable aerial means.

These theories, which had a great vogue at their appearance, have had to submit to a certain usury with the passage of time. After the double experience of the Ethiopian War and the Spanish War, they can be ranged in the category of honeymoons. If there is an example typical of the failure of this creation of the imagination, it is certainly the action of the Nationalist aviation against Madrid. Following their attack "a l'esbrouffe" which failed at the beginning of November, and after they had recognized that in spite of severe losses they could not capture a city of a million inhabitants which was determined to defend itself, the Nationalists determined to act by terror, provoked by massive bombafdment of the quarters of the capitol located far behind the line of fire. Everyone knows the result of this method Douhetienne: nothing; nothing, at least of what was expected by

the directors at Burgos. They needed to deal with a nation of cowards, without resource, without pride, and without courage, in order that the ravages and destructions effected in the rear, painful and discouraging as they might be, could succeed in a decisive manner to break the morale of the inhabitants.

Massive bombing operations, well conducted and well supplied, could evidently do a great deal of damage; but to win the war that way alone, there is an abyss, an abyss which is far from being jumped.

At first it seemed that in several cases the leaders of the Government were seduced by the idea that an unexpected rush of tanks could clear the ground, even conquer it, forcing the enemy infantry to flee, upsetting and destroying the hostile artillery. One remembers perhaps the order of the day grandiloquently lanced by the President of the Council, Largo Cabalero, toward the end of October, when the tanks furnished by Rusisa made their first appearance south of Madrid in the sector of Parla and Torrejon de Velasco? It was all of a plan of battle, the anticipation of a victory which was to put the enemy to flight. What happened? The tanks, profiting by surprise, overthrew the advance posts, pushing back a few supports, even reached some advanced batteries; but, as soon as the adversary, not intrenched, it should be remarked, and only poorly equipped with antitank weapons, took hold of himself and alerted his reserves, there resulted a reflux and partial destruction of the tanks and their occupants. A new proof was given that, without accompanying infantry, tanks alone are susceptible of only a sterile effort, of fugitive and vain successes. Of this truth there have been many other demonstrations; there were numerous others because the tank attack, acting autonomously, corresponds to a seductive and fallacious mental view. It is exactly of the same order of theory as the Douhetienne; it proceeds from the same sophistry and it is headed for the same destiny.

The Nationals at that time had few antitank weapons. It was, without doubt, necessity that made their imagination discover a procedure of attacking tanks which seemed to be effective in certain cases. Not having steel projectiles to use against tanks, the Nationalists thought of burning them with gasoline. The methods used seem to have varied according to the model of tank. But they were ignited above and below and it seems that a large number of Russian tanks succumbed to this type of attack (bottles benzine tossed on them, ignited by the exhaust or heat, or else lighted material thrown on). It is obviously a method applicable only to close combat (men in fox holes or trenches are safe as tanks pass over).

The failure to capture Madrid indicates the difficulty of reducing a great city. The Germans in 1870 before Paris were prepared to reduce it by famine and bombardment solely, without actually attacking.

In 1914 the large cities in northern France and Belgium fell by maneuver without being either attacked or defended.

General Franco has given us a lesson in demonstrating that a large modern city with its underground and solid construction constitutes a formidable obstacle which cannot be reached by marching at it.

The return to the enveloping maneuver constitutes a sane return. However, at this time the rapid and decisive combats of the early stages of the war are no longer possible. The adversaries confront each other in solid positions, organized in depth, and they employ an equal courage and determination. It is a new era in the hostilities which has commenced.

April 1937

ACCOMPANYING WEAPONS WITH THE INFANTRY ATTACK.
[L'accompagnement des attaques d'infanterie.] General Rouquerol

Attacks are decided by superiority of fire. This should be maintained during the entire duration of an attack. But the conditions of preparation fires and accompanying fires are decidedly different. Preparation fire never completely destroys isolated resistance or obstacles on the battlefield. Therefore the attacking infantry must have means immediately available to destroy them.

Leading fires would be a better descriptive term than accompanying fires. It is essential that there should be an intimate relationship between the attacking unit and the source of fire. The value of this was recognized in the war by the use of minenwerfers by the Germans and trench artillery by the French. These were often able to furnish aid that was impossible for the more distant artillery.

These experiences favor the organic assignment of suitable accompanying weapons to the infantry. Each regiment of infantry needs a permanent detachment of division artillery and of tanks. They should train with it in peace and accompany it in war.

SOME REFLECTIONS ON OUR COUNTRY AND ITS DEFENSE.
[Quelques réflexions sur notre pays et sa défense.] Colonel Pfund

An examination of the possible procedures of an attack on Switzerland and the action needed in time of peace to prevent them. Special attention is given to the need of peacetime preparation for defense against aerial attack by gas and bombs. The borders of the country susceptible to attack by mechanized forces should be protected by large numbers of antitank mines.

THE LIBRARY OF THE OFFICER.
[La bibliothèque de l'officier.] Lieut.Colonel Mayer

The officer's reading should be suitable to his position. The strategy of Hannibal is of little interest to the company commander. He should study the technique of his arm. He and officers of every grade need to give more study to the psychology of the soldier and noncommissioned officer. The best source to study this psychology is in the narratives and memoirs of these individually unimportant persons. Tactics of ancient wars are of little value.

UNIFIED COMMAND.
[Le commandement unique.] General de Cugnac

Unified command, equally with instructed personnel and matériel, is a necessity which no longer requires proof. Theory demands it and practice has demonstrated that it is indispensable. Why wait then?

In the law now being discussed (in France), feeble and timid proposals are made. In it the government is authorized by "special decrees" to name a commander for the armies of the land, the sea and the air.

War menaces us! Organize everything to receive it! It is generally believed that it will commence by a sudden attack. Are we going to wait until the enemy advance guards are at Amiens or Besancon before a generalissimo is designated?

Now is the time to choose the man who will have the heavy mission of holding the sword of France in his hands. Since the task is heavy, that is one more reason to give him the chance to prepare for it. It is evident that this is the opinion in all other countries, since they all now have a commander designated.

It has been said that the difficulties are greater than the advantages. Our opinion is the contrary. The disadvantages can be summarized in some difficulties in correspondence and transmission of orders, but especially in the injury to individual susceptibilities. All this will vanish in dust as soon as the shadow of probable war is profiled on the wall. As for its advantages, we shall not abuse our readers by recalling the course of the World War before the unified command and what it was after.

If the role of the generalissimo is to be fruitful, it is essential that his situation as well as his authority should be precisely stated in law. With our present organization he would be impotent.

The leader of all the armed forces of the nation should be supported by the authority of the head of the government. Marshal von Blomberg

in Germany and Marshal Badoglio in Italy are buttressed by Hitler and Mussolini. This permits them to prepare completely the military instrument of their countries.

We do not need a dictator. We have a head in the President of the Council. The French generalissimo should be subject to him. He should send his instructions to the armies of the land, sea and air in his name. For this the President of the Council should have authority over the rest of the cabinet. This exists in practice but should also be regulated by law. Note that the ministers are administrators. The generalissimo will not touch their prerogatives. He will occupy himself with preparation for war only. By authority of the President of the Council he will ask the ministers of war, navy and air to transmit such and such instructions to the troops.

So that his influence will be effective and so that he will be able to assure himself of the desired collaborators in war, it is necessary that the generalissimo be consulted in naming the principal commanders. Let us not fall back into the error of before 1914 when General Joffre knew that he would be forced to change half of his corps commanders as soon as war started.

A nation can permit itself many errors in organization in time of peace. In industry and finance the errors can be repaired. But the misadministration of our military forces often has irreparable consequences. A defeat can bring the loss of a country in the first days of war.

It is essential that our army of the air understand that it does not make war by itself, but that it will contribute powerfully to the victory by waging war with the army and navy under a single command. Our aviators are too good Frenchmen not to be willing to sacrifice their desire for independence and their individualistic spirit.

Our deputies, who saw the frightful image of war pass before their eyes just recently, should have the courage to break with past errors. They can become creators by voting a law which will give France a generalissimo in time of peace and war and make him the military organ of the President of the Council.

May 1937

CONCERNING OVERHEAD TRAMS.
[A propos de téléphériques.] Colonel Lecomte

The topography of Switzerland is such that isolated bodies of troops in the mountains frequently can be supplied most economically by the use of overhead cables to bridge the more difficult terrain. The Austrians and the Italians used them in the Alps during the World War. The Italians bridged one of the steepest ravines in Ethiopia with an overhead cable capable of carrying trucks, saving about 30 miles of very difficult highway movement. The Swiss Army is equipped with matériel for the construction of heavy overhead cable ways but is entirely lacking in organization and equipment for light overhead trams. These cannot be improvised. They should be developed now and suitable engineer organizations charged with their installation.

THE AIRPLANE AGAINST THE TANK.
[L'avion contre le char de combat.] Lieut.Colonel Mayer

The danger of sudden irruption of tank or mechanized units at the outbreak of war or on the flank and rear of armies demands a weapon of superior speed to block them. The speed and freedom of action of the airplane make it the ideal weapon for this purpose. Planes carrying small cannon firing explosive projectiles are easily able to attack tanks. Tznks are blind and deaf and have little chance to fight back. The airplane is not limited to one attack but can attack and return until its ammunition is exhausted. Unless antiaircraft tanks are provided such mechanized raids will have to be protected by friendly aviation. But even friendly aviation will not be able to furnish complete protectio.n The attacking airplanes, close to the ground, are hard to discover and hard to attack. Attack by gun fire is to be preferred to attack by bombs.

THE MILITARY PREPARATION OF YOUTH IN SWITZERLAND.
[La préparation militaire de la jeunesse en Suisse.] Lieut.Colonel Junod

Since 1921, Swiss youth from the age of eight years up have been given military training. This training has been the basis of the effectiveness of the Swiss militia system. In 1936, 72,038 Swiss youth were given military training under Federal encouragement. Although the Swiss were the initiators of the military training of youth, other countries, notably Germany, Italy and Russia now surpass Switzerland in this respect. It is now necessary to reorganize this instruction and furnish the army with young men better prepared both physically and morally.

EXCESSIVE TRUST.
[Excès de confiance.] Captain Thilo

Switzerland is troubled with double nationality of many of its subjects. There are German-Swiss and Italian-Swiss. Many of these have military obligations outside of Switzerland. They are to be found, nevertheless, in the army and in the government. Elementary prudence demands that every such case be investigated to insure their worthiness of trust in the defense of the country.

June 1937

UNIFIED COMMAND.
[Le commandement unique.] General Rouquerol

THE MAINTENANCE OF THE MENTAL FLEXIBILITY OF THE OFFICER.
[La mentalité de l'officier et sa mobilisation.] Lieut.Colonel Mayer

After three years of position warfare the procedures of stabilization had become so ingrained in the average officer that he was incapable of the initiative required in maneuvers. In the infantry this was shown by the "trench psychology" and in the artillery officers became incapable of rapid selection of positions and of opening fire without long calculations.

All grades become equally stiff mentally. This springs from the customs of military life, from discipline, respect for instructions, excessive regimentation. The initiative of the professional officer is more often destroyed and one often finds the reserve officers more apt to envisage new solutions. A certain narrowness of character, if not of attitude, is fatally more or less inherent in the regular officer.

Freshness of imagination and youthfulness of spirit are retained by reading, by observation and by meditation. The elder Moltke was an example of a man who maintained his openness of spirit through a lifetime of study. He was able to create original methods of command thanks to his intellectual suppleness. It is essential for the officer to maintain a flexible mind so that he will not need to be forced from above to change his preconceptions and habits.

POSSIBLE EFFECTS OF OUR NEW MILITARY ORGANIZATION ON THE EMPLOYMENT OF ARTILLERY.
[Répercussions possibles de notre nouvelle organisation militaire sur l'emploi de l'artillerie.] Major Gonard

The infantry in the new Swiss division is supplied with the 81-mm mortar and antitank weapons. It is thus stronger than previously in close combat. The artillery organization has been modified by the addition of a battalion of 105-mm guns with an effective range of 17,000 meters. The artillery is thus able to give more attention to distant targets and has the means to do it. The 105-mm gun should march well forward in column and should be emplaced in action as far forward as the light artillery. This will enable it to commence counterbattery action early, before the arrival of the corps artillery, and to undertake distant interdiction of the enemy rear.

RIVISTA DI ARTIGLIERIA E GENIO (Italy)

By Major E.M. Benitez, Coast Artillery Corps

April-May 1937

FIRE AND MOVEMENT IN THE INFANTRY DIVISION.
[Fuoco e movimento nella divisione di fanteria.] General Ago

The author discusses the organization and regulation of fire in the infantry division. He analyses the infantry advance and then discusses the organization and distribution of artillery fire. In stabilized warfare, the commander is acquainted with the terrain, the situation and the objectives, and therefore, plans for the employment of the artillery can be carefully prepared. In a war of movement, however, with varying conditions and with insufficient knowledge of the enemy situation, there may not be enough time available to prepare an organization that will produce the best results. For this reason, the infantry regiment today has been organically provided with one battery of accompanying artillery. In the attack, in close combat, when our infantry is closing up on the enemy, the assault mortar is a valuable weapon, because its high angle fire can give close support to the infantry without danger of firing on its own troops, and can also fire concentrations at points on the terrain that cannot be reached by field pieces.

OPPOSING ARTILLERIES IN THE BATTLE OF THE PIAVE.
[Le opposte artiglierie nella battaglia del Piave.] Lieut.Colonel Frongia

A comprehensive account of the strength and distribution of the Australian and Italian artillery, respectively, at the battle of the Piave, 15 June 1918. In the Trentino offensive during the spring of 1916, the Austrians used the methods employed by the Germans at Verdun. The methods, successfully employed by the Germans at Riga in 1917 and against the Italians at the Isonzo, improved by the German experience in Picardy and Flanders, were copied by the Austrians, who, however, failed to make allowances for the difference of conditions. The Italian command received the information that the Austrian attack would be launched at 3:00 AM, 15 June, and this enabled the artillery to make plans for a counterpreparation. The Italian artillery had preponderance of long range guns of medium caliber, and this superiority was greatly felt during the second phase of the battle and particularly along the Piave. After 20 June, the Italian artillery succeeded in completely isolating the Austrian troops that had crossed the river. At the beginning of the battle, the Italian counterpreparation served to break up the enemy attack; later on, it contributed towards halting the enemy advance at the Piave, and the eventual retirement of the Austrian Army.

THE ARTILLERY IN THE BATTLE OF ASHANGI, 31 MARCH-5 APRIL 1936.
[L'artiglieria alla battaglia dell'Ascianghi (31 marzo-5 aprile 1936).] Alberto Cappa

The battle of Ashangi, fought on 31 March-5 April 1936, was the decisive battle of the Italo-Abyssinian War. The Italian advance guard reached the Dubbar Pass on 17 March, and began to entrench itself in a naturally strong position, pending the arrival of the main body. The Abyssinian Army, under Emperor Haile Selassi, arrived on the 21st. Instead of attacking at once, the Emperor held a council of war on the 24th, and it was decided at this meeting to make a frontal attack on the 31st. In the meantime, the Italians were strengthening their positions and bringing up guns, ammunition and reinforcements. The Ethiopians launched their attack against the southern face of the Italian position, but the defenders held their ground against repeated assaults. At 11:30 AM, 31 March, the Italians launched

a counteroffensive, and towards evening the Abyssinians began to retire. The Italians lost no time in exploiting their success, bringing up their guns in pursuit of the enemy rear guard. By 5 April the Abyssinian army had been routed and the road to Addis Ababa was open.

REMARKS ON FIRE DISPERSION.
[Considerazioni sulla dispersione del tiro.]

ARTILLERY PRACTICE. DIVISION ARTILLERY IN THE DEFENSE.
[Practica artigliereska—L'artiglieria divisionale nella sosta diffensive.] Lieut.Colonel Camèra

The artillery commander must exercise initiative and have topographical data prepared so that the artillery may be able to open fire with minimum delay as soon as the position has been occupied.

THE PROBLEM OF NAVAL FIRE.
[Il problema del tiro navale—Concetti e principi informativi.] Lieut.Commander Isidori, Italian Navy

The author discusses the characteristics of naval fire and analyses the difficulties involved due, among other things, to the fact that the platform on which the gun is mounted is subjected to complicated oscillations as a result of the explosion proper and also to the rolling of the ship caused by the action of the waves, to the fact that the gun and its platform are moving along with the same speed as that of the ship, and finally, to the trend of ever increasing ranges in naval combat.

During the Russo-Japanese War, in the battle of Tshushima (27 May 1905) the battle range varied from 4,300 to 6,500 yards; at the battle of Coronel in November 1914, the German squadron under von Spee, opened fire on the British at 11,000 yards; in turn, the British under Admiral Sturdee opened fire on the German squadron, off the Falkland Islands, at 16,000 yards. The initial range at the Dogger Bank action in the North Sea on 24 January 1915, and at the battle of Jutland, between the British and German fleets on 31 May 1916, was approximately 19,500 yards.

The problem of naval gunfire has not yet been completely solved in a satisfactory manner. Two different solutions have been presented:

(1) Stabilization of the gun platform by preventing oscillation of the ship.

(2) Stabilization of the gun sight, so as to compensate automatically for the deviation caused by the oscillatory movement of the ship.

THE GAS ENGINE AND ITS PRACTICAL POSSIBILITIES.
[Il gassogeno e le sue possiblità pratiche.] Lieut.Colonel Cavalli

The author comments on the possibilities of the gas engine for the propulsion of motor vehicles, and after discussing its advantages and disadvantages, concludes that it is not a practical proposition for use in ordinary motor cars.

TOPOGRAPHICAL PREPARATION OF FIRE WITH MAJOR CALIBER GUNS.
[Preparazione topografica del tiro con i cannoni a grandissima gittata.] Major Lerz

An analysis of the mathematical calculation of range and azimuth from data furnished by the Topographical Section of the Army.

A RECENT STUDY OF THE SECOND BALLISTIC PROBLEM.
[Uno studio recente sul secondo problema balistico.] Prof. Burzio

A mathematical discussion of the so-called second ballistic problem—the pendulum movement of projectiles.

TRAJECTORY OF PROJECTILES.
[Traiettoria e odografa balistica.] Prof. Jachino
Comments on the trajectory of projectiles.

June 1937

INSTITUTE OF HISTORY AND CULTURE OF THE CORPS OF ENGINEERS.
[Instituto Storico e di Cultura dell'Arma del Genio.]

On 25 November 1925, a monument was erected in Rome in memory of engineer soldiers fallen in the battlefield. In June 1934, it was decided to replace the Historical Museum by a new institution to be called the "Institute of History and Culture of the Corps of Engineers." The monument to the soldier and the old Historical Museum will be transferred to a building now in the process of construction, a complete description and photograph of which appears in the June 1937 issue of the "Rivista di Artiglieria e Genio."

THE CORPS OF ENGINEERS DURING THE YEARS XIII AND XIV OF THE FASCIST ERA AND DURING THE CAMPAIGN IN EAST AFRICA.
[L'Arma del Genio negli anni XIII e XIV dell'era fascista e durante la campagna in Africa Orientale.]

A continuation of a previous article, giving an account of the excellent work done by the Enginers in the Italian campaign in East Africa. The construction of bridges and roads and the difficulties encountered are described in detail. Several photographs and sketches of roads and bridges constructed, as well as the work done to facilitate the advance of the motorized columns on Addis Ababa are also shown.

TERRAIN IN MILITARY OPERATIONS.
[Il terreno nelle operazioni militari.] Major General Cardona

Today, the terrain has attained an ever increasing influence in the preparation, execution and success of military operations. Frederick II paid considerable attention to the terrain, but it was Napoleon who first realized that terrain was an important element in war and had to be analyzed and utilized in campaign. Terrain features may offer obstacles or facilitate operations, increase the fire efficiency or reduce the effective field of fire. The author discusses the characteristics of the various types of soil from the technical, tactical and logistical point of view, dealing in particular with the influence of soil upon engineer works in the battlefield. Military history today, he writes, has shown that offensive or defensive operations, or their combination with maneuver, depend upon the nature of the terrain. The operations in the Carso, for example, were of a different nature than those in the mountains. Geology will be a predominant factor in future wars and a scientific knowledge of the terrain will be an influential factor in the success of military operations.

GRAPHICAL SOLUTION FOR THE CALCULATION OF THE BREAKING POINT OF STRUCTURES—METALLIC, REINFORCED CONCRETE, WOODEN.
[Nomogrammi per il calcolo delle cariche occorrenti per la rottura di strutture metalliche, di cemento armato e di legno.] Brigadier General Palumbo

Two graphs included in this article were prepared by the author for use of engineer officers in campgin, to facilitate the determination of safe loads without the necessity of complicated mathematical calculations.

THE USE OF WELDING IN THE REPAIR AND REINFORCEMENT OF METALLIC BRIDGES.
[L'impiego della saldatura per il rinforzo e la riparazione dei ponti metallici.] Captain Betocchi

The importance of welding in the repairs of metallic construction and its advantages, particularly for repair of bridges, is emphasized. It is sug-

gested that field shops for electric welding be established for service in campaign, under a competent and qualified engineer officer.

FAST RETICULES (WIRE ENTANGLEMENT NETWORK).
[Reticolato speditivo.] Lieut.Colonel Betzu

A description and method of employment of quickly constructed wire network for the protection of troops, especially suitable for use in mobile warfare.

SEARCH OF SUBSOIL WATER FOR MILITARY PURPOSES.
[Ricerca delle acque del sottosuolo ai fini militari.] Captain Mantia

A discussion in geology, with illustrations of soil and subsoil, in which the author suggests the most efficient methods to be followed while searching for subsoil water for troops in the field.

WING MESSENGERS.
[Messaggeri alti.]

Comments on an article published by the Italian Pigeon Federation in the journal "Columbi d'Italia."

In the early days, messenger pigeons were sold at high prices. Caesar utilized pigeons and was kept informed in this way of what was going on in the far corners of the Empire. Alexander the Great had an excellent pigeon service. During the World War, with telegraph, telephone and radio available, it was thought that no use would be made of pigeons, but in great offensives, the telephone and telegraph lines became destroyed and radio service was unsatisfactory, so extensive use was again made of pigeons to carry messages. Japan used pigeons extensively in the 1934 maneuvers. According to press reports, out of 1,290 pigeons released only 150 failed to return.

ROYAL AIR FORCE QUARTERLY (Great Britain)

October 1937

FIGHTER VERSUS BOMBER. By the authors of "Air Strategy"
PROTECTION—ABSTRACTS FROM "L'AVIATION DE BOMBARDEMENT." Rougeron
THE ITALO-ABYSSINIAN WAR, 1935-36. Wing-Commander Lloyd
WINTER FLYING IN CANADA. Flight-Lieutenant Van Vliet

ROYAL ENGINEERS JOURNAL (Great Britain)

September 1937

THE PROBLEM OF THE ENCOUNTER BATTLE AS AFFECTED BY MODERN BRITISH WAR ESTABLISHMENTS. Brigadier Montgomery
CHANGI CANTONMENT, 1933-1937. By J.F.F.
AN IMPROVISED RAFTING OPERATION. Lieutenant Close

UNITED SERVICES REVIEW (Great Britain)

15 July 1937

INVALID ARTILLERY. HOW AN OLD SYSTEM MIGHT BE REVIVED IN THE HANDS OF THE PERSIANS. (IV) Sir Frederick O'Connor

22 July 1937

TRADE DEFENCE. PROBLEM OF THE HIGH SEAS RAIDER. Sir Herbert Russell

AMERICA'S PROBLEM OF DEFICIENT METALS. Swaminathan

29 July 1937

THE ARMY AND THE PEOPLE. Captain Macnamara

TURNING POINT IN SPAIN? POSSIBLE EFFECTS ON "NEXT GREAT WAR"

GAS DEFENCE IN ITALY (Photographs)

GUNS AND TONS. AN ALLEGED JAPANESE VIEW OF HEAVY ARMAMENTS. Sir Herbert Russell

5 August 1937

CLOUDS OVER THE PANAMA CANAL. ITS IMPORTANCE TO THE UNITED STATES

MINISTRY OF DEFENCE. IS IT REALLY PRACTICABLE? Sir Herbert Russell

AIR ATTACK OF THE FUTURE OVER ENGLAND. Air Commodore Charlton

12 August 1937

THE LESSONS OF THE WAR IN SPAIN. AN AIR FORCE CANNOT FIGHT A WAR ALONE. Captain Macnamara

BRITAIN'S AIR DEFENCE ORGANIZATION. Air Commodore Charlton

19 August 1937

PREPARING THE MERCHANT NAVY. Lieut.Commander Saul

26 August 1937

ARMY METHODS OF TRAINING. APPROACH OF THE MODERN REORGANIZED INFANTRY PLATOON TOWARDS THE ENEMY. Captain Macnamara

IF THE MEDITERRANEAN WERE CLOSED. Air Commodore Charlton

2 September 1937

ECONOMIC CONSEQUENCES OF THE SPANISH CIVIL WAR. Swaminathan

WORLD MANOEUVRES AND THE AIR ATTACK PROBLEM. Air Commodore Charlton

SHANGHAI'S NEW DEFENCE FORCE

16 September 1937

SOME FACTS ABOUT THE FAR EASTERN WAR. Air Commodore Charlton

THE NEW GERMAN FLEET. Lieut.Commander Giese

23 September 1937

BANISHING THE SPECTRE OF WAR. Air Commodore Charlton

WISSEN UND WEHR (Germany)

By Major E.M. Benitez, Coast Artillery Corps

April 1937

TRAFALGAR—TILSIT—WATERLOO. Rear Admiral Donner

The author discusses the historical events that preceded these great engagements and shows how they brought about fundamental changes in history. Their influence on future generations is now appreciated; but

this fact was never realized by nations at the time that these decisive battles took place.

THE ENTRANCE OF THE UNITED STATES IN THE WORLD WAR TWENTY YEARS AGO.
[Zum Eintritt Amerikas in den Weltkrieg vor 20 Jahren.] Dr. P. Ostwald

A review of the diplomatic events preceding the entry of the United States in the World War. Dr. Ostwald maintains that the United States, being the most powerful neutral nation in the world after commencement of the Great War, its mission should have been to bring about a quick and just end to the war, by utilizing its political, moral and economic influence. He criticizes President Wilson's attitude on the grounds that, while elected president by the people on a peace platform as the surest way to avoid war, he actually led the United States into war on the Allied side.

THE NATIONAL DEFENSE ACT OF CZECHOSLOVAKIA.
[Das tschechoslowakische Staatsverteidigungsgesetz.] Dr. E. Hoch

The National Defense Act of Czechoslovakia is, in fact, a training manual. It deals with the political, geographical and economical situation of the nation, the organization of the industrial and military means and the moral obligation to serve the nation with labor and all other means available.

THE LANGUAGE PROBLEM IN THE BELGIAN ARMY.
[Die Sprachenfrage im belgischen Heere.] Colonel v.Ditfurth

The Flemings live in Flanders (Northern Belgium) along the coast, in the rich agricultural regions where the three great cities, Brussels, Antwerp and Ghent are located, and speak Flemish. The Walloons, on the other hand, inhabit the industrial regions of Southern Belgium, on the Meuse and the Sambre (Liege, Namur, Charleroi, Mons) and the Ardennes. The number of recruits in the army shows that the Flemings predominate, and for this reason the latter now are demanding certain political concessions, the most important being that army officers, the majority of whom are French-speaking Walloons, be required to speak Flemish also. A bill to this effect has been introduced in Parliament.

HORSE-BREEDING IN GERMANY.
[Gedanken und Betrachtungen über die Gestaltung der deutschen Pferdezucht in Berücksichtigung der neuzeitlichen Heeres- und Volkswirtschaft.] Major General Leythaeuser

Germany is now in a period of national and economic reconstruction, mainly due to the ever-increasing motorization on land and development of airplanes. However, horse breeding is still of great importance, since saddle and draft horses are indispensable. The historical development of this industry and its present status is explained in this article.

May 1937

CONDUCT AND TECHNIQUE OF WAR.
[Kriegführung und Technik.] Colonel Müller-Loebnitz

The German General Staff has been criticized for failure to comprehend the importance of the technician, and the importance of science in modern war. This criticism is aimed not only at the General Staff but also at the War Ministry and even at those civilian authorities responsible for the economical means of the population. The author analyzes the difference between the technique and the conduct of war and goes back to the Ancient

and Middle Ages, particularly the Romans; then he discusses the important inventions, such as the invention of gunpowder, the construction of fortifications and the war of sieges, and even the invention of the steam engine. He then analyzes the modern ideas, modern armies and industries, discusses the technique during the World War, and that of a future war; finally he draws the conclusion that in a future war, the morale and the matériel must be welded and there must exist absolute coordination between the commander of troops and the technicians.

PREPARATION AND TRAINING OF AN INFANTRY DIVISION AND ITS SUCCESS AT THE BATTLE OF CAMBRAI.
[Erziehungsarbeit an einer Infanterie-Division und ihr Erfolg in der Tankschlacht bei Cambrai.] Lieutenant Zindler

The author discusses the condition of the German 54th Division at the beginning of September 1917; after a hard fight at the Aisne and at Champagne, the division was withdrawn to a quiet sector, called the "Siegfried" position; he gives in detail the amounts of artillery and artillery ammunition available. He then analyzes the enemy's intentions. Against this division, Marshal Haig massed seven full divisions, well equipped and well rested, with 350 tanks to clear the zone of advance from obstacles. Considering the forces employed, the author raises the question as to whether or not the results obtained may be considered an enemy success or a failure, and concludes by attributing the excellent showing of the division to the will of the leader.*

June 1937

HAS STRATEGY CHANGED AS A RESULT OF THE WORLD WAR?
[Haben sich die Formen der Strategie auf Grund der Erfahrungen des Weltkrieges geändert?] Field Marshal Werth, Hungarian Army

It used to be a common saying that the next war commenced where the preceding one left off. This is true when they follow each other in rapid succession; but where a certain period of time elapses between the two, then new conditions may modify the methods employed, as was the case during the World War. The attack in that war, even though conducted with large superiority of forces as in the case of the Russians, did not result in the annihilation of the enemy. The offensives came to a standstill, fronts became stalemated and position warfare gradually prevailed. Belligerents realized sooner or later, that the offensive was not the sole solution, as it was believed before the Great War. The power of the defense was gradually recognized and this ever-increasing power of the defense will, in future wars, exert considerable influence in the field of strategy. Marshal Werth discusses the strategical offensive of the future, the complicated problem of moving large bodies of troops, the great importance of supply, the proper selection of the direction of the main effort, and gives some examples from the World War.

THE FUNDAMENTAL POLITICAL AND MILITARY CAUSES OF NAPOLEON'S DEFEAT.
[Das wehrpolitische Grundproblem in der Napoleonischen Niederlage.] G. Roloff

Napoleon's victories were due to his numerical superiority, which finally was lost during the campaigns of 1813-1814, to such an extent that victories

*(NOTE: The British attack at Cambrai on 20 December 1917, supported by the entire tank corps under General Elles, was successful. However, the success obtained was not fully exploited. A gap of over one mile in the German front east of Masnières was not discovered, and two cavalry divisions remained idle. For a more complete discussion of these operations, see "The Command and General Staff School Quarterly," June 1937, page 55, "Tanks and Antitank Defense During the World War."—EDITOR.)

became impossible. The causes of this numerical inferiority are attributed to the system of organization and recruiting, as well as to the financial condition of the Empire.

POPULATION AND MILITARY STRENGTH.
[Volkskraft und Wehrhaftigkeit.] Dr. Adam

Some factors that influence available manpower are: number of births, marriages, mortality and race characteristics. The author compares the conditions of the German people before and after the World War, and submits figures showing the population of cities by ages.

IMPORTANCE OF UPRISINGS IN THE NORTHWEST FRONTIER OF INDIA.
[Wesen und Bedeutung der Kämpfe an der Nordwestgrenze von Britisch-Indien.]

The only part of this vast frontier that has any military value is the Afghanistan border, which extends for about 1,000 kilometers and must be defended by the British from attacks by hostile tribes, as occurred in 1935. The geographical and military conditions of this frontier are discussed as well as the measures taken by the British for its defense.

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List of Periodicals Indexed and Key to Abbreviations

A Med Bul—Army Medical Bulletin

A Ord—Army Ordnance

A Quar—Army Quarterly (Great Britain)

Bul Belge Mil—Bulletin Belge des Sciences Militaires (Belgium)

Can Def Quar—Canadian Defence Quarterly (Canada)

Cav Jour—Cavalry Journal

Cav Jour [GB]—Cavalry Journal (Great Britain)

Chem War—Chemical Warfare Bulletin

CA Jour—Coast Artillery Journal

FA Jour—Field Artillery Journal

Ftg Forc—Fighting Forces (Great Britain)

Inf Jour—Infantry Journal

Jour RAMC—Journal of the Royal Army Medical Corps (Great Britain)

Jour R Art—Journal of the Royal Artillery (Great Britain)

Jour RUSI—Journal of the Royal United Service Institution (Great Britain)

Jour USII—Journal of the United Service Institution of India (Great Britain—India)

Kraft—Kraftfahrkampftruppe (Germany)

MC Gaz—Marine Corps Gazette

Mil Mitt—Militärwissenschaftliche Mitteilungen (Austria)

Mil-Woch—Militär-Wochenblatt (Germany)

Mil Eng—Military Engineer

Mil Surg—Military Surgeon

Nav Inst Proc—Naval Institute Proceedings

Pion—Pioniere (Germany)

QM Rev—Quartermaster Review

Res Off—Reserve Officer

Rv l'Air—Revue de l'Armée de l'Air (France)

Rv d'Art—Revue d'Artillerie (France)

Rv de Cav—Revue de Cavalerie (France)

Rv d'Inf—Revue d'Infanterie (France)

Rv Mil Gen—Revue Militaire Générale (France)

Rv Mil Suisse—Revue Militaire Suisse (Switzerland)

Riv Art e Gen—Rivista di Artiglieria e Genio (Italy)

RAF Quar—Royal Air Force Quarterly (Great Britain)

Roy Eng Jour—Royal Engineers Journal (Great Britain)

US Rev—United Services Review (Great Britain)

Ws & Wr—Wissen und Wehr (Germany)

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The airplane against the tank. (Rv Mil Suisse—May 1937)
Preparation and training of an infantry division and its success at the battle of Cambrai. (Ws & Wr—May 1937)
Concrete examples of antitank defense. [See "Abstracts"]
Night action of tanks. [See "Abstracts"]
Tanks and antitank defense during the World War. [See "Abstracts"]
Role and importance of artillery in modern tanks. [See "Abstracts"]

TERRAIN

Terrain in military operations. (Riv Art e Gen—Jun 1937)
Concrete examples of antitank defense. [See "Abstracts"]

THOMAS, Major General George H. (1816-1870)

The rock of Chickamauga. (QM Rev—Sep-Oct 1937)

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Our new military map. (Rv Mil Suisse—May 1937)

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The German network of super highways in 1936. (Bul Belge Mil—Apr 1937)
Air transports and disembarkations. Parachuting. (Rv d'Art—Apr 1937)

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The immortal cavalry. (Mil-Woch—2 Jul 1937)

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Colonial military forces. (Mil-Woch—2 Jul 1937)

Mobilization

Mobilization in retrospect. (A Ord—Sep-Oct 1937)

Organization and Equipment

Organization. (Inf Jour—Jul-Aug 1937)
At fighting weight. (Inf Jour—Sep-Oct 1937)
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Leavenworth at home and abroad. (Inf Jour—Sep-Oct 1937)

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America's problem of deficient metals. (US Rev—22 Jul 1937)

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Cavalry maneuvers at Fort Knox. (Cav Jour—Sep-Oct 1937)
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Leavenworth at home and abroad. (Inf Jour—Sep-Oct 1937)
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Seapower and politics. (Mil Mitt—Apr 1937)

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The administration of enlisted personnel. (Nav Inst Proc—Sep 1937)

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Leadership cannot be taught. (Nav Inst Proc—Aug 1937)

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America's problem of deficient metals. (US Rev—22 Jul 1937)
Turning point in Spain? (US Rev—29 Jul 1937)
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ITALY-ABYSSINIA (1935-1936)

talian field artillery in the Ethiopian campaign. (FA Jour—Jul-Aug 1937)
The Italo-Abyssinian War, 1935-36. (RAF Quar—Oct 1937)
The artillery in the battle of Ashangi, 31 March-5 April 1936. (Riv Art e Gen—Apr-May 1937)

The Corps of Engineers during the years XIII and XIV of the Fascist era and during the campaign in East Africa. (Riv Art e Gen—Jun 1937)

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JAPAN-RUSSIA (1904-1905)

Preparation for war—Lessons of the Russo-Japanese conflict. (Jour RUSI—Aug 1937)
Tactics employed by the Japanese Army, 1904-5. (Jour RUSI—Aug 1937)
The Russo-Japanese War up to Liao Yang. (A Quar—Oct 1937)

JAPAN-CHINA (1930-)

Japanese activities in North China. (MC Gaz—Aug 1937)
Shanghai's new defence force. (US Rev—2 Sep 1937)
Some facts about the Far Eastern War. (US Rev—16 Sep 1937)
Japanese attacks at Shanghai and the defense by the Chinese, 1931-1932. [See "Original Military Study"]

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17th CENTURY

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Lutzen, 1632. (Cav Jour [GB]—Jul 1937)

18th CENTURY

Wars of the French Revolution (1789-1795)

The Battle of Valmy: A reconsideration. (A Quar—Oct 1937)

NAPOLEONIC WARS (1795-1815)

The qualities and failings of Napoleon's cavalry. (Cav Jour [GB]—Jul 1937)
General Curély: Cavalry leader and trooper. (Cav Jour—Jul-Aug 1937)
Trafalgar, the death knell of an alliance. (Nav Inst Proc—Nov 1937)
Was Bonaparte a great man or not? (Rv Mil Gen—Apr 1937)
Trafalgar—Tilsit—Waterloo. (Ws & Wr—Apr 1937)
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AUSTRIA-PRUSSIA (1866)

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Turning point in Spain? (US Rev—29 Jul 1937)
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The lessons of the War in Spain. (US Rev—12 Aug 1937)
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Debunking Bunker Hill. (Inf Jour—Jul-Aug 1937)
Cavalry in the American War of Independence. (Cav Jour [GB]—Oct 1937)

CIVIL WAR (1861-1865)

General John Morgan: A Confederate cavalry leader. (Cav Jour [GB]—Jul 1937)
Forrest: Natural fighting leader of fighting men. (Cav Jour—Jul-Aug 1937)
The rock of Chicamauga. (QM Rev—Sep-Oct 1937)

WORLD WAR (1914-1918)

C—Socio-economic History

Was there a possibility of deciding the war on the Western Front in 1916? (Mil-Woch—16 Jul 1937)
The entrance of the United States in the World War twenty years ago. (Ws & Wr—Apr 1937)

E—General Military History

The German Official History. The first two months of the Somme. (A Quar—Oct 1937)
Until when? (Mil-Woch—9 Jul 1937)
Comparison of the strength of modern armies during the World War. (Mil-Woch—9 Jul 1937)
The entrance of the United States in the World War twenty years ago. (Ws & Wr—Apr 1937)

G—Arms and Services

AIR ARM

Air battle, past and future. (Rv l'Air—Jun 1937)

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The German XXIII Reserve Corps crosses the Marne. (FA Jour—Jul-Aug 1937)
Shaiba. (Jour R Art—Oct 1937)
Short history of flash and sound ranging. (Rv d'Art—May 1937)
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Two cavalry episodes in the Palestine Campaign, 1917-1918. (Cav Jour [GB]—Jul 1937)
We must have cavalry. (Cav Jour—Sep-Oct 1937)
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Modern cavalry. (Mil-Woch—11 Jun 1937)
Strategic reconnaissance. [See "Abstracts"]

CHEMICAL SERVICE

Fighting a chemical platoon. (Res Off—Sep 1937)

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The fall of a fortress. (CA Jour—Sep-Oct 1937)
Military geology and water supply along the Belgian coast in 1915. (Pion—May 1937)

INFANTRY

A night engagement: the affair of the Chateau de la Gravelle, 5 September 1914. (Rv d'Inf —Apr 1937)
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War experiences of a Territorial Medical Officer. (Jour RAMC—Aug 1937)

QUARTERMASTER SERVICE

British G.H.Q. in France, 1918. (QM Rev—Jul-Aug 1937)

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The tanks come of age. (Inf Jour—Jul-Aug 1937)
The tanks at Cambrai. (A Ord—Sep-Oct 1937)
Preparation and training of an infantry division and its success at the battle of Cambrai. (Ws & Wr—May 1937)
Night action of tanks. [See "Abstracts"]
Tanks and antitank defense during the World War. [See "Abstracts"]

H—Military Conduct of the War in the Field

The German XXIII Reserve Corps crosses the Marne. (FA Jour—Jul-Aug 1937)
We can take it. (Inf Jour—Jul-Aug 1937)
Military application of physical geography. (Cav Jour—Jul-Aug 1937)
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We must have cavalry. (Cav Jour—Sep-Oct 1937)
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XVII.—The Battle of Ramadi. (Ftg Forc—Oct 1937)
Shaiba. (Jour R Art—Oct 1937)
Areas allotted to units and their boundaries in mountainous countries. (Mil Mitt—Apr 1937)
The fight for the strongly fortified places on the Western Front. (Mil-Woch—28 May 1937)
Until when? (Mil-Woch—9 Jul 1937)
Was there a possibility of deciding the war on the Western Front in 1916? (Mil-Woch—16 Jul 1937)
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Preparation and training of an infantry division and its success at the battle of Cambrai. (Ws & Wr—May 1937)
Strategic reconnaissance. [See "Abstracts"]
Tanks and antitank defense during the World War. [See "Abstracts"]

J—Campaigns and Battles

AFRICAN AREA

German East Africa

Operations against the Wintgens-Naumann column south of the railway: Kigoma—Tabora—Dar-es-Salam, 19 to 26 May 1917. (Bul Belge Mil—May 1937)

ASIATIC AREA—TURKISH THEATER

Dardanelles (Gallipoli Front)

Lost opportunities in 1915? (A Quar—Oct 1937)
Naval attack on the Dardanelles. (MC Gaz—Aug 1937)
Attack and defense of seacoasts. (Mil-Woch—11, 18 Jun 1937)

Mesopotamian Front

XVI.—The Battle of Duqma. (Ftg Forc—Aug 1937)
XVII.—The Battle of Ramadi. (Ftg Forc—Oct 1937)
Shaiba. (Jour R Art—Oct 1937)

Palestine Front

The Yeomanry at Ballin and at El Mughar (November 12th and 13th, 1917). (Cav Jour [GB]—Oct 1937)
Two cavalry episodes in the Palestine Campaign, 1917-1918. (Cav Jour [GB]—Jul 1937)

Persian Front

In the hands of the Persians. (US Rev—15 Jul 1937)

EUROPEAN AREA—BALKAN THEATER

Grecian Front

The development of the break in the Salonica front by the French cavalry in 1918. (Cav Jour [GB]—Oct 1937)

EUROPEAN AREA—ITALIAN THEATER

A subaltern in Italy. (Ftg Forc—Oct 1937)
Areas allotted to units and their boundaries in mountainous countries. (Mil Mitt—Apr 1937)
Opposing artilleries in the battle of the Piave. (Riv Art e Gen—Apr-May 1937)

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The employment of obstacles in Southern Poland in October 1914. (Mil-Woch—9 Jul 1937)

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The Termonde battles of 26 and 27 September 1914. (Bul Belge Mil—Jun 1937)
Panic in war. (Bul Belge Mil—Jun 1937)
The capture of a German flag by Captain Sonnois, 3d Hussars, 10 September 1914. (Rv de Cav—Mar-Apr 1937)
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Protection of the Dutch-German frontier during the World War. (Pion—May 1937)

1916

The tanks come of age. (Inf Jour—Jul-Aug 1937)
The German Official History. The first two months of the Somme. (A Quar—Oct 1937)
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We can take it. (Inf Jour—Jul-Aug 1937)
The tanks come of age. (Inf Jour—Jul-Aug 1937)
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L—Naval History

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Guns and tons. (US Rev—29 Jul 1937)
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Tactics employed by the Japanese Army, 1904-5. (Jour RUSI—Aug 1937)
Weapons and the law. (A Ord—Sep-Oct 1937)
Light machine guns. (A Ord—Sep-Oct 1937)
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Artillery mounted in aircraft (Pictorial). (A Ord—Nov-Dec 1937)
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A new epoch of field artillery. (Res Off—Nov 1937)
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The division artillery. (Rv d'Art—Jun 1937)
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Accompanying weapons with the infantry attack. (Rv Mil Suisse—Apr 1937)
Possible effects of our new military organization on the employment of artillery. (Rv Mil Suisse—Jun 1937)
Concrete examples of antitank defense. [See "Abstracts"]
Role and importance of artillery in modern warfare. [See "Abstracts"]

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Air battle, past and future. (Rv l'Air—Jun 1937)

YUGOSLAVIA (ARMY OF)

The organization and functioning of the sanitary service in foreign armies. (Bul Belge Mil—Apr 1937)
Europe in arms! (Bul Belge Mil—May 1937)
Motorization and mechanization. (Bul Belge Mil—Jun 1937)

Supplement

THE COMMAND AND GENERAL STAFF SCHOOL QUARTERLY

DECEMBER, 1937

THE SPANISH CIVIL WAR

The Insurgent regime proclaimed a blockade of all Spanish Government ports, effective 28 November. Since the conquest of Asturias on the Bay of Biscay, General Franco has been massing his full naval force in the Western Mediterranean, off the only strip of coast remaining to the Government. Franco has demanded an unconditional surrender before December 5, when he would launch his major offensive if his terms are refused.

It is reported that Sir Robert Hodgson has been appointed as the first British agent to Insurgent Spain. The Insurgents claim that the Nationalist Government has been recognized by Italy, Germany, the Vatican, Nicaragua, Hungary and Guatemala, while the friendly attitude of Japan and Portugal has been interpreted as the equivalent of recognition.

THE SINO-JAPANESE WAR

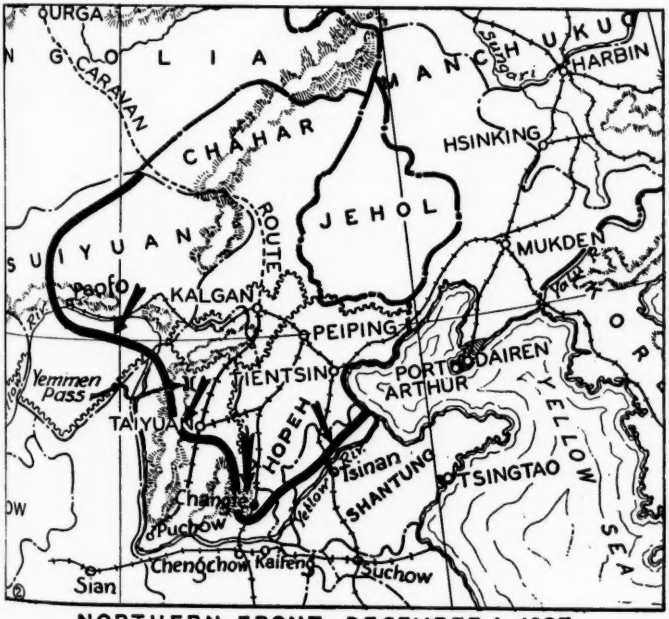
The Japanese have continued their victorious drive. On 8 November, Shanghai was captured, the Chinese Army falling back on the so-called "HINDENBURG" line: FUSHAN — CHANGSU — SOOCHOW — KASHING, about 50 miles west of Shanghai and about 125 miles east of Nanking. On 16 November, the Japanese captured Soochow, keypoint of the Hindenburg line. On the 17th, Chinese Headquarters were transferred to Hankow, Changsha and Chungking, military headquarters, however, remaining at Nanking. On the 21st, the Japanese captured Wusih,

MAP No. 1

SHANGHAI FRONT AS OF DEC. 1, 1937

situated about 25 miles northeast of Soochow, and considered one of the strongholds of the Nanking defenses. On the 23d, the Japanese land and air forces began a concerted drive against the Chinese entrenched line WUSIH—KIANGYIN, while about 70 Japanese vessels have been massed in the Yangtze River for naval cooperation with the land forces advancing toward Nanking. The Kiangyin forts and a submerged boom of concrete-laden vessels bar the way up the Yangtze River and have prevented Japanese warships from reaching China's almost deserted capital. By the 30th, Kiangyin City had fallen to Japanese columns; however, the Kiangyin forts, overlooking the Yangtze River, were stubbornly held, although outflanked and threatened with momentary capture. Reports indicate that the Chinese are falling back to the line CHINKIANG—TANYANG—KINTAN, forty to sixty miles east and southeast of Nanking, closely pursued by the Japanese Army, which continues moving on westward into the heart of China.

Map No. 2



NORTHERN FRONT DECEMBER 1, 1937

On the Northern Front, the Japanese now control the provinces of Chagar, Suiyan, Hopeh and most of Shansi. Shantung has been penetrated only to the Yellow River. On 22 November, the Japanese announced that they were preparing to cross the Yellow River to attack Tsinanfu, capital of the Shantung province, but so far the Japanese have not effected a river crossing.

Shanghai's customs and telegraph and radio stations are now in Japanese hands. Refusal of Chinese telegraphers and technicians to work under Japanese rule has paralyzed all communications, so that Shanghai remains at present isolated by radio and telegraph from the rest of China.

Supplement to C. & G. S. School Quarterly, December 1937.